



## SEQUENCE LISTING

&lt;110&gt; Bertin, John

&lt;120&gt; NOVEL MOLECULES OF THE NBS/LRR PROTEIN FAMILY AND USES THEREOF

&lt;130&gt; 07334-268001

&lt;140&gt; US 09/848,035

&lt;141&gt; 2001-05-03

&lt;150&gt; US 60/201,464

&lt;151&gt; 2000-05-03

&lt;160&gt; 17

&lt;170&gt; FastSEQ for Windows Version 4.0

&lt;210&gt; 1

&lt;211&gt; 2464

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;220&gt;

&lt;221&gt; CDS

&lt;222&gt; (1)...(2463)

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Leu Asn Glu Asp Glu Leu Lys Ser Phe Lys Ser Leu Leu Trp Ala Phe  
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ccc ctc gaa gac gtg cta cag aag acc cca tgg tct gag gtg gaa gag 144  
Pro Leu Glu Asp Val Leu Gln Lys Thr Pro Trp Ser Glu Val Glu Glu  
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acg gaa ttg tgt aag atg gca aag gct gag atg atg gag gac gga cag 288  
Thr Glu Leu Cys Lys Met Ala Lys Ala Glu Met Met Glu Asp Gly Gln  
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gtg caa gaa ata gat aat cct gag ctg gga gat gca gaa gaa gac tcg 336  
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A1

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| 115 120 125   |      |
| aaa caa tct ttg gtc tgg aag aac acc ttt tgg caa gga gac att gac | 432  |
| Lys Gln Ser Leu Val Trp Lys Asn Thr Phe Trp Gln Gly Asp Ile Asp |      |
| 130 135 140   |      |
| aat ttc cat gac gac gtc act ctg aga aac caa cgg ttc att cca ttc | 480  |
| Asn Phe His Asp Asp Val Thr Leu Arg Asn Gln Arg Phe Ile Pro Phe |      |
| 145 150 155 160   |      |
| ttg aat ccc aga aca ccc agg aag cta aca cct tac acg gtg gtg ctg | 528  |
| Leu Asn Pro Arg Thr Pro Arg Lys Leu Thr Pro Tyr Thr Val Val Leu |      |
| 165 170 175   |      |
| cac ggc ccc gca ggc gtg ggg aaa acc acg ctg gcc aaa aag tgt atg | 576  |
| His Gly Pro Ala Gly Val Gly Lys Thr Thr Leu Ala Lys Lys Cys Met |      |
| 180 185 190   |      |
| ctg gac tgg aca gac tgc aac ctc agc ccg acg ctc aga tac gcg ttc | 624  |
| Leu Asp Trp Thr Asp Cys Asn Leu Ser Pro Thr Leu Arg Tyr Ala Phe |      |
| 195 200 205   |      |
| tac ctc agc tgc aag gag ctc agc cgc atg ggc ccc tgc agt ttt gca | 672  |
| Tyr Leu Ser Cys Lys Glu Leu Ser Arg Met Gly Pro Cys Ser Phe Ala |      |
| 210 215 220   |      |
| gag ctg atc tcc aaa gac tgg cct gaa ttg cag gat gac att cca agc | 720  |
| Glu Leu Ile Ser Lys Asp Trp Pro Glu Leu Gln Asp Asp Ile Pro Ser |      |
| 225 230 235 240   |      |
| atc cta gcc caa gca cag aga atc ctg ttc gtg gtc gat ggc ctt gat | 768  |
| Ile Leu Ala Gln Ala Gln Arg Ile Leu Phe Val Val Asp Gly Leu Asp |      |
| 245 250 255   |      |
| gag ctg aaa gtc cca cct ggg gcg ctg atc cag gac atc tgc ggg gac | 816  |
| Glu Leu Lys Val Pro Pro Gly Ala Leu Ile Gln Asp Ile Cys Gly Asp |      |
| 260 265 270   |      |
| tgg gag aag aag aag ccg gtg ccc gtc ctc ctg ggg agt ttg ctg aag | 864  |
| Trp Glu Lys Lys Lys Pro Val Pro Val Leu Leu Gly Ser Leu Leu Lys |      |
| 275 280 285   |      |
| agg aag atg tta ccc agg gca gcc ttg ctg gtc acc acg cgg ccc agg | 912  |
| Arg Lys Met Leu Pro Arg Ala Ala Leu Leu Val Thr Thr Arg Pro Arg |      |
| 290 295 300   |      |
| gca ctg agg gac ctc cag ctc ctg gcg cag cag ccg atc tac ata agg | 960  |
| Ala Leu Arg Asp Leu Gln Leu Leu Ala Gln Gln Pro Ile Tyr Ile Arg |      |
| 305 310 315 320   |      |
| gtg gag ggc ttc ctg gag gag gac agg agg gcc tat ttc ctg aga cac | 1008 |
| Val Glu Gly Phe Leu Glu Glu Asp Arg Arg Ala Tyr Phe Leu Arg His |      |
| 325 330 335   |      |

A1

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| aac gcg gcc ctg ttc cag ctg ggc tcg gcc ccc gcg gtg tgc tgg att    | 1104 |
| Asn Ala Ala Leu Phe Gln Leu Gly Ser Ala Pro Ala Val Cys Trp Ile    |      |
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| gtg tgc acg act ctg aag ctg cag atg gag aag ggg gag gac ccg ccg    | 1152 |
| Val Cys Thr Thr Leu Lys Leu Gln Met Glu Lys Gly Glu Asp Pro Pro    |      |
| 370 375 380  |      |
| gtt ccc gca ggg cgc aca gct gcg ggg cgc gct gcg gac gct gag cct    | 1200 |
| Val Pro Ala Gly Arg Thr Ala Ala Gly Arg Ala Ala Asp Ala Glu Pro    |      |
| 385 390 395 400  |      |
| cct ggc cgc gca ggg ctg tgg gcg cag atg tcc gtg ttc cac cga gag    | 1248 |
| Pro Gly Arg Ala Gly Leu Trp Ala Gln Met Ser Val Phe His Arg Glu    |      |
| 405 410 415  |      |
| gac ctg gaa agg ctc ggg gtg cag gag tcc gac ctc cgt ctg ttc ctg    | 1296 |
| Asp Leu Glu Arg Leu Gly Val Gln Glu Ser Asp Leu Arg Leu Phe Leu    |      |
| 420 425 430  |      |
| A/ gac gga gac atc ctc cgc cag gac aga gtc tcc aaa ggc tgc tac tcc | 1344 |
| Asp Gly Asp Ile Leu Arg Gln Asp Arg Val Ser Lys Gly Cys Tyr Ser    |      |
| 435 440 445  |      |
| ttc atc cac ctc agc ttc cag cag ttt ctc act gcc ctg ttc tac gcc    | 1392 |
| Phe Ile His Leu Ser Phe Gln Gln Phe Leu Thr Ala Leu Phe Tyr Ala    |      |
| 450 455 460  |      |
| ctg gag aag gag gag gag gag gac agg gac ggc cac gcc tgg gac att    | 1440 |
| Leu Glu Lys Glu Glu Glu Glu Asp Arg Asp Gly His Ala Trp Asp Ile    |      |
| 465 470 475 480  |      |
| ggg gac gta cag aag ctg ctt tcc gga gaa gaa aga ctc aag aac ccc    | 1488 |
| Gly Asp Val Gln Lys Leu Leu Ser Gly Glu Glu Arg Leu Lys Asn Pro    |      |
| 485 490 495  |      |
| gac ctg att caa gta gga cac ttc tta ttc ggc ctc gct aac gag aag    | 1536 |
| Asp Leu Ile Gln Val Gly His Phe Leu Phe Gly Leu Ala Asn Glu Lys    |      |
| 500 505 510  |      |
| aga gcc aag gag ttg gag gcc act ttt ggc tgc cgg atg tca ccg gac    | 1584 |
| Arg Ala Lys Glu Leu Glu Ala Thr Phe Gly Cys Arg Met Ser Pro Asp    |      |
| 515 520 525  |      |
| atc aaa cag gaa ttg ctg caa tgc aaa gca cat ctt cat gca aat aag    | 1632 |
| Ile Lys Gln Glu Leu Leu Gln Cys Lys Ala His Leu His Ala Asn Lys    |      |
| 530 535 540  |      |
| ccc tta tcc gtg acc gac ctg aag gag gtc ttg ggc tgc ctg tat gag    | 1680 |
| Pro Leu Ser Val Thr Asp Leu Lys Glu Val Leu Gly Cys Leu Tyr Glu    |      |
| 545 550 555 560  |      |

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|---|------|
| tct cag gag gag gag ctg gcg aag gtg gtg gtg gcc ccg ttc aag gaa | 1728 |
| Ser Gln Glu Glu Glu Leu Ala Lys Val Val Val Ala Pro Phe Lys Glu |      |
| 565 570 575   |      |
| att tct att cac ctg aca aat act tct gaa gtg atg cat tgt tcc ttc | 1776 |
| Ile Ser Ile His Leu Thr Asn Thr Ser Glu Val Met His Cys Ser Phe |      |
| 580 585 590   |      |
| agc ctg aag cat tgt caa gac ttg cag aaa ctc tca ctg cag gta gca | 1824 |
| Ser Leu Lys His Cys Gln Asp Leu Gln Lys Leu Ser Leu Gln Val Ala |      |
| 595 600 605   |      |
| aag ggg gtg ttc ctg gag aat tac atg gat ttt gaa ctg gac att gaa | 1872 |
| Lys Gly Val Phe Leu Glu Asn Tyr Met Asp Phe Glu Leu Asp Ile Glu |      |
| 610 615 620   |      |
| ttt gaa agc tca aac agc aac ctc aag ttt ctg gaa gtg aaa caa agc | 1920 |
| Phe Glu Ser Ser Asn Ser Asn Leu Lys Phe Leu Glu Val Lys Gln Ser |      |
| 625 630 635 640   |      |
| ttc ctg agt gac tct tct gtg cgg att ctt tgt gac cac gta acc cgt | 1968 |
| Phe Leu Ser Asp Ser Ser Val Arg Ile Leu Cys Asp His Val Thr Arg |      |
| 645 650 655   |      |
| agc acc tgt cat ctg cag aaa gtg gag att aaa aac gtc acc cct gac | 2016 |
| Ser Thr Cys His Leu Gln Lys Val Glu Ile Lys Asn Val Thr Pro Asp |      |
| 660 665 670   |      |
| acc gcg tac cgg gac ttc tgt ctt gct ttc att ggg aag aag acc ctc | 2064 |
| Thr Ala Tyr Arg Asp Phe Cys Leu Ala Phe Ile Gly Lys Lys Thr Leu |      |
| 675 680 685   |      |
| acg cac ctg acc ctg gca ggg cac atc gag tgg gaa cgc acg atg atg | 2112 |
| Thr His Leu Thr Leu Ala Gly His Ile Glu Trp Glu Arg Thr Met Met |      |
| 690 695 700   |      |
| ctg atg ctg tgt gac ctg ctc aga aat cat aaa tgc aac ctg cag tac | 2160 |
| Leu Met Leu Cys Asp Leu Leu Arg Asn His Lys Cys Asn Leu Gln Tyr |      |
| 705 710 715 720   |      |
| ctg agg ttg gga ggt cac tgt gcc acc ccg gag cag tgg gct gaa ttc | 2208 |
| Leu Arg Leu Gly Gly His Cys Ala Thr Pro Glu Gln Trp Ala Glu Phe |      |
| 725 730 735   |      |
| ttc tat gtc ctc aaa gcc aac cag tcc ctg aag cac ctg cgt ctc tca | 2256 |
| Phe Tyr Val Leu Lys Ala Asn Gln Ser Leu Lys His Leu Arg Leu Ser |      |
| 740 745 750   |      |
| gcc aat gtg ctc ctg gat gag ggt gcc atg ttg ctg tac aag acc atg | 2304 |
| Ala Asn Val Leu Leu Asp Glu Gly Ala Met Leu Leu Tyr Lys Thr Met |      |
| 755 760 765   |      |
| aca cgc cca aaa cac ttc ctg cag atg ttg tcg ttg gaa aac tgt cgt | 2352 |
| Thr Arg Pro Lys His Phe Leu Gln Met Leu Ser Leu Glu Asn Cys Arg |      |
| 770 775 780   |      |

A1

ctt aca gaa gcc agt tgc aag gac ctt gct gct gtc ttg gtt gtc agc 2400  
 Leu Thr Glu Ala Ser Cys Lys Asp Leu Ala Ala Val Leu Val Val Ser  
 785 790 795 800

aag aag ctg aca cac ctg tgc ttg gcc aag aac ccc att ggg gat aca 2448  
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ggg gtg aag ttt ctg t 2464  
 Gly Val Lys Phe Leu  
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 Pro Leu Glu Asp Val Leu Gln Lys Thr Pro Trp Ser Glu Val Glu Glu  
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 Ala Asp Gly Lys Lys Leu Ala Glu Ile Leu Val Asn Thr Ser Ser Glu  
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 Thr Glu Leu Cys Lys Met Ala Lys Ala Glu Met Met Glu Asp Gly Gln  
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 Val Gln Glu Ile Asp Asn Pro Glu Leu Gly Asp Ala Glu Glu Asp Ser  
 100 105 110  
 Glu Leu Ala Lys Pro Gly Glu Lys Glu Gly Trp Arg Asn Ser Met Glu  
 115 120 125  
 Lys Gln Ser Leu Val Trp Lys Asn Thr Phe Trp Gln Gly Asp Ile Asp  
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 Asn Phe His Asp Asp Val Thr Leu Arg Asn Gln Arg Phe Ile Pro Phe  
 145 150 155 160  
 Leu Asn Pro Arg Thr Pro Arg Lys Leu Thr Pro Tyr Thr Val Val Leu  
 165 170 175  
 His Gly Pro Ala Gly Val Gly Lys Thr Thr Leu Ala Lys Lys Cys Met  
 180 185 190  
 Leu Asp Trp Thr Asp Cys Asn Leu Ser Pro Thr Leu Arg Tyr Ala Phe  
 195 200 205  
 Tyr Leu Ser Cys Lys Glu Leu Ser Arg Met Gly Pro Cys Ser Phe Ala  
 210 215 220  
 Glu Leu Ile Ser Lys Asp Trp Pro Glu Leu Gln Asp Asp Ile Pro Ser  
 225 230 235 240  
 Ile Leu Ala Gln Ala Gln Arg Ile Leu Phe Val Val Asp Gly Leu Asp  
 245 250 255  
 Glu Leu Lys Val Pro Pro Gly Ala Leu Ile Gln Asp Ile Cys Gly Asp  
 260 265 270  
 Trp Glu Lys Lys Lys Pro Val Pro Val Leu Leu Gly Ser Leu Leu Lys  
 275 280 285  
 Arg Lys Met Leu Pro Arg Ala Ala Leu Leu Val Thr Thr Arg Pro Arg  
 290 295 300

A1

Ala Leu Arg Asp Leu Gln Leu Leu Ala Gln Gln Pro Ile Tyr Ile Arg  
 305 310 315 320  
 Val Glu Gly Phe Leu Glu Glu Asp Arg Arg Ala Tyr Phe Leu Arg His  
 325 330 335  
 Phe Gly Asp Glu Asp Gln Ala Met Arg Ala Phe Glu Leu Met Arg Ser  
 340 345 350  
 Asn Ala Ala Leu Phe Gln Leu Gly Ser Ala Pro Ala Val Cys Trp Ile  
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 Val Cys Thr Thr Leu Lys Leu Gln Met Glu Lys Gly Glu Asp Pro Pro  
 370 375 380  
 Val Pro Ala Gly Arg Thr Ala Ala Gly Arg Ala Ala Asp Ala Glu Pro  
 385 390 395 400  
 Pro Gly Arg Ala Gly Leu Trp Ala Gln Met Ser Val Phe His Arg Glu  
 405 410 415  
 Asp Leu Glu Arg Leu Gly Val Gln Glu Ser Asp Leu Arg Leu Phe Leu  
 420 425 430  
 Asp Gly Asp Ile Leu Arg Gln Asp Arg Val Ser Lys Gly Cys Tyr Ser  
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 Phe Ile His Leu Ser Phe Gln Gln Phe Leu Thr Ala Leu Phe Tyr Ala  
 450 455 460  
 Leu Glu Lys Glu Glu Glu Glu Asp Arg Asp Gly His Ala Trp Asp Ile  
 465 470 475 480  
 Gly Asp Val Gln Lys Leu Leu Ser Gly Glu Glu Arg Leu Lys Asn Pro  
 485 490 495  
 Asp Leu Ile Gln Val Gly His Phe Leu Phe Gly Leu Ala Asn Glu Lys  
 500 505 510  
 Arg Ala Lys Glu Leu Glu Ala Thr Phe Gly Cys Arg Met Ser Pro Asp  
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 Ile Lys Gln Glu Leu Leu Gln Cys Lys Ala His Leu His Ala Asn Lys  
 530 535 540  
 Pro Leu Ser Val Thr Asp Leu Lys Glu Val Leu Gly Cys Leu Tyr Glu  
 545 550 555 560  
 Ser Gln Glu Glu Glu Leu Ala Lys Val Val Val Ala Pro Phe Lys Glu  
 565 570 575  
 Ile Ser Ile His Leu Thr Asn Thr Ser Glu Val Met His Cys Ser Phe  
 580 585 590  
 Ser Leu Lys His Cys Gln Asp Leu Gln Lys Leu Ser Leu Gln Val Ala  
 595 600 605  
 Lys Gly Val Phe Leu Glu Asn Tyr Met Asp Phe Glu Leu Asp Ile Glu  
 610 615 620  
 Phe Glu Ser Ser Asn Ser Asn Leu Lys Phe Leu Glu Val Lys Gln Ser  
 625 630 635 640  
 Phe Leu Ser Asp Ser Ser Val Arg Ile Leu Cys Asp His Val Thr Arg  
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 Ser Thr Cys His Leu Gln Lys Val Glu Ile Lys Asn Val Thr Pro Asp  
 660 665 670  
 Thr Ala Tyr Arg Asp Phe Cys Leu Ala Phe Ile Gly Lys Lys Thr Leu  
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 Thr His Leu Thr Leu Ala Gly His Ile Glu Trp Glu Arg Thr Met Met  
 690 695 700  
 Leu Met Leu Cys Asp Leu Leu Arg Asn His Lys Cys Asn Leu Gln Tyr  
 705 710 715 720  
 Leu Arg Leu Gly Gly His Cys Ala Thr Pro Glu Gln Trp Ala Glu Phe  
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A1

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aag att ctt gat ttc aaa ctg cca cag ttt cca ctg ata cag atg aca 144  
Lys Ile Leu Asp Phe Lys Leu Pro Gln Phe Pro Leu Ile Gln Met Thr  
35 40 45

aaa gaa gaa ctg gct aac gtg ttg cca atc tct tat gag gga cag tat 192  
Lys Glu Glu Leu Ala Asn Val Leu Pro Ile Ser Tyr Glu Gly Gln Tyr  
50 55 60

ata tgg aat atg ctc ttc agc ata ttt tca atg atg cgt aag gaa gat 240  
Ile Trp Asn Met Leu Phe Ser Ile Phe Ser Met Met Arg Lys Glu Asp  
65 70 75 80

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85 90 95

caa tta gcc tat gat tct acc agc tat tat tca gca aac aat ctc aat 336  
Gln Leu Ala Tyr Asp Ser Thr Ser Tyr Tyr Ser Ala Asn Asn Leu Asn  
100 105 110

gtg ttc ctg atg gga gag aga gca tct gga aaa act att gtt ata aat 384  
Val Phe Leu Met Gly Glu Arg Ala Ser Gly Lys Thr Ile Val Ile Asn  
115 120 125

ctg gct gtg ttg agg tgg atc aag ggt gag atg tgg cag aac atg atc 432  
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130 135 140

tcg tac gtc gtt cac ctc act gct cac gaa ata aac cag atg acc aac 480  
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agc agc ttg gct gag cta atc gcc aag gac tgg cct gac ggc cag gct 528  
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ccc att gca gac atc ctg tct gat ccc aag aaa ctc ctt ttc atc ctc 576  
 Pro Ile Ala Asp Ile Leu Ser Asp Pro Lys Lys Leu Leu Phe Ile Leu  
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gag gac ttg gac aac ata aga ttc gag tta aat gtc aat gaa agt gct 624  
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 225 230 235 240

tca agg ccc aca cgt ggg aat aat gta aaa acg ttc ttg aaa gag gta 768  
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gat tgc tgc acg acc ttg cag ctg tcg aat ggg aag agg gag ata tat 816  
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 370 375 380

ggg ttt act gag gct gat gtc tct gtg ttg cag gcc gcg aat att ctt 1200  
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 385 390 395 400

ttg ccg agc aac act cat aaa gac cgt tac aag ttc ata cac ttg aac 1248  
 Leu Pro Ser Asn Thr His Lys Asp Arg Tyr Lys Phe Ile His Leu Asn  
 405 410 415

gtc cag gag ttt tgt aca gcc att gca ttt ctg atg gca gta ccc aac 1296  
 Val Gln Glu Phe Cys Thr Ala Ile Ala Phe Leu Met Ala Val Pro Asn  
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 Tyr Leu Ile Pro Ser Gly Ser Arg Glu Tyr Lys Glu Lys Arg Glu Gln  
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gca aac agg aga aag att ctt gag aca tcc ttt gga tac cag cta ccg 1440  
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ctc tat gag aat cgg gaa gaa gaa ttt gtg aag acg att gtg gat gct 1584  
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A1

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 Met Ala Glu Ser Asp Ser Thr Asp Phe Asp Leu Leu Trp Tyr Leu Glu  
   1                                5                                10                                15  
 Asn Leu Ser Asp Lys Glu Phe Gln Ser Phe Lys Lys Tyr Leu Ala Arg  
                                 20                                25                                30  
 Lys Ile Leu Asp Phe Lys Leu Pro Gln Phe Pro Leu Ile Gln Met Thr  
                                 35                                40                                45  
 Lys Glu Glu Leu Ala Asn Val Leu Pro Ile Ser Tyr Glu Gly Gln Tyr  
                                 50                                55                                60  
 Ile Trp Asn Met Leu Phe Ser Ile Phe Ser Met Met Arg Lys Glu Asp  
                                 65                                70                                75                                80  
 Leu Cys Arg Lys Ile Ile Gly Arg Arg Asn His Val Phe Tyr Ile Leu  
                                 85                                90                                95  
 Gln Leu Ala Tyr Asp Ser Thr Ser Tyr Tyr Ser Ala Asn Asn Leu Asn  
                                 100                                105                                110  
 Val Phe Leu Met Gly Glu Arg Ala Ser Gly Lys Thr Ile Val Ile Asn  
                                 115                                120                                125  
 Leu Ala Val Leu Arg Trp Ile Lys Gly Glu Met Trp Gln Asn Met Ile  
                                 130                                135                                140  
 Ser Tyr Val Val His Leu Thr Ala His Glu Ile Asn Gln Met Thr Asn  
                                 145                                150                                155                                160  
 Ser Ser Leu Ala Glu Leu Ile Ala Lys Asp Trp Pro Asp Gly Gln Ala  
                                 165                                170                                175  
 Pro Ile Ala Asp Ile Leu Ser Asp Pro Lys Lys Leu Leu Phe Ile Leu  
                                 180                                185                                190  
 Glu Asp Leu Asp Asn Ile Arg Phe Glu Leu Asn Val Asn Glu Ser Ala  
                                 195                                200                                205  
 Leu Cys Ser Asn Ser Thr Gln Lys Val Pro Ile Pro Val Leu Leu Val  
                                 210                                215                                220  
 Ser Leu Leu Lys Arg Lys Met Ala Pro Gly Cys Trp Phe Leu Ile Ser  
                                 225                                230                                235                                240  
 Ser Arg Pro Thr Arg Gly Asn Asn Val Lys Thr Phe Leu Lys Glu Val  
                                 245                                250                                255  
 Asp Cys Cys Thr Thr Leu Gln Leu Ser Asn Gly Lys Arg Glu Ile Tyr  
                                 260                                265                                270  
 Phe Asn Ser Phe Phe Lys Asp Arg Gln Arg Ala Ser Ala Ala Leu Gln  
                                 275                                280                                285  
 Leu Val His Glu Asp Glu Ile Leu Val Gly Leu Cys Arg Val Ala Ile  
                                 290                                295                                300

A1

Leu Cys Trp Ile Thr Cys Thr Val Leu Lys Arg Gln Met Asp Lys Gly  
 305 310 315 320  
 Arg Asp Phe Gln Leu Cys Cys Gln Thr Pro Thr Asp Leu His Ala His  
 325 330 335  
 Phe Leu Ala Asp Ala Leu Thr Ser Glu Ala Gly Leu Thr Ala Asn Gln  
 340 345 350  
 Tyr His Leu Gly Leu Leu Lys Arg Leu Cys Leu Leu Ala Ala Gly Gly  
 355 360 365  
 Leu Phe Leu Ser Thr Leu Asn Phe Ser Gly Glu Asp Leu Arg Cys Val  
 370 375 380  
 Gly Phe Thr Glu Ala Asp Val Ser Val Leu Gln Ala Ala Asn Ile Leu  
 385 390 395 400  
 Leu Pro Ser Asn Thr His Lys Asp Arg Tyr Lys Phe Ile His Leu Asn  
 405 410 415  
 Val Gln Glu Phe Cys Thr Ala Ile Ala Phe Leu Met Ala Val Pro Asn  
 420 425 430  
 Tyr Leu Ile Pro Ser Gly Ser Arg Glu Tyr Lys Glu Lys Arg Glu Gln  
 435 440 445  
 Tyr Ser Asp Phe Asn Gln Val Phe Thr Phe Ile Phe Gly Leu Leu Asn  
 450 455 460  
 Ala Asn Arg Arg Lys Ile Leu Glu Thr Ser Phe Gly Tyr Gln Leu Pro  
 465 470 475 480  
 Met Val Asp Ser Phe Lys Trp Tyr Ser Val Gly Tyr Met Lys His Leu  
 485 490 495  
 Asp Arg Asp Pro Glu Lys Leu Thr His Met Pro Leu Phe Tyr Cys  
 500 505 510  
 Leu Tyr Glu Asn Arg Glu Glu Glu Phe Val Lys Thr Ile Val Asp Ala  
 515 520 525  
 Leu Met Glu Val Thr Val Tyr Leu Gln Ser Asp Lys Asp Met Met Val  
 530 535 540  
 Ser Leu Tyr Cys Leu Asp Tyr Cys Cys His Leu Arg Thr Leu Lys Leu  
 545 550 555 560  
 Ser Val Gln Arg Ile Phe Gln Asn Lys Glu Pro Leu Ile Arg Pro Thr  
 565 570 575  
 Ala Ser Gln Met Lys Ser Leu Val Tyr Trp Arg Glu Ile Cys Ser Leu  
 580 585 590  
 Phe Tyr Thr Met Glu Ser Leu Arg Glu Leu His Ile Phe Asp Asn Asp  
 595 600 605  
 Leu Asn Gly Ile Ser Glu Arg Ile Leu Ser Lys Ala Leu Glu His Ser  
 610 615 620  
 Ser Cys Lys Leu Arg Thr Leu  
 625 630

<210> 5  
 <211> 1566  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (1)...(1563)

<400> 5  
 atg aag gct gaa cta ctg gag aca tgg gac aac atc agt tgg cct aaa  
 Met Lys Ala Glu Leu Leu Glu Thr Trp Asp Asn Ile Ser Trp Pro Lys  
 1 5 10 15

|   |     |
|---|-----|
| gac cac gta tat atc cgt aat aca tca aag gac gaa cat gag gaa ctg | 96  |
| Asp His Val Tyr Ile Arg Asn Thr Ser Lys Asp Glu His Glu Glu Leu |     |
| 20 25 30  |     |
| cag cgc cta ctg gat cct aat agg act aga gcc cag gcc cag acg ata | 144 |
| Gln Arg Leu Leu Asp Pro Asn Arg Thr Arg Ala Gln Ala Gln Thr Ile |     |
| 35 40 45  |     |
| gtc ttg gtg ggg agg gca ggg gtt ggg aag acc acc ttg gca atg cag | 192 |
| Val Leu Val Gly Arg Ala Gly Val Gly Lys Thr Thr Leu Ala Met Gln |     |
| 50 55 60  |     |
| gct atg ctg cac tgg gca aat gga gtt ctc ttt cag caa agg ttc tcc | 240 |
| Ala Met Leu His Trp Ala Asn Gly Val Leu Phe Gln Gln Arg Phe Ser |     |
| 65 70 75 80   |     |
| tat gtt ttc tat ctc agc tgc cat aaa ata agg tac atg aag gaa act | 288 |
| Tyr Val Phe Tyr Leu Ser Cys His Lys Ile Arg Tyr Met Lys Glu Thr |     |
| 85 90 95  |     |
| acc ttt gct gaa ttg att tct ttg gat tgg ccc gat ttt gat gcc ccc | 336 |
| Thr Phe Ala Glu Leu Ile Ser Leu Asp Trp Pro Asp Phe Asp Ala Pro |     |
| 100 105 110   |     |
| att gaa gag ttc atg tct caa cca gag aag ctc ctg ttt att att gat | 384 |
| Ile Glu Glu Phe Met Ser Gln Pro Glu Lys Leu Leu Phe Ile Ile Asp |     |
| 115 120 125   |     |
| ggc ttt gag gaa ata atc ata tct gag tca cgc tct gag agc ttg gat | 432 |
| Gly Phe Glu Glu Ile Ile Ile Ser Glu Ser Arg Ser Glu Ser Leu Asp |     |
| 130 135 140   |     |
| gat ggc tcg cca tgt aca gac tgg tac cag gag ctc cca gtg acc aaa | 480 |
| Asp Gly Ser Pro Cys Thr Asp Trp Tyr Gln Glu Leu Pro Val Thr Lys |     |
| 145 150 155 160   |     |
| atc cta cac agc ttg ttg aag aaa gaa ttg gtt ccc ctg gct acc tta | 528 |
| Ile Leu His Ser Leu Leu Lys Lys Glu Leu Val Pro Leu Ala Thr Leu |     |
| 165 170 175   |     |
| ctg atc acg atc aag acc tgg ttt gtg aga gat ctt aag gcc tca tta | 576 |
| Leu Ile Thr Ile Lys Thr Trp Phe Val Arg Asp Leu Lys Ala Ser Leu |     |
| 180 185 190   |     |
| gtg aat cca tgc ttt gta caa att aca ggg ttc aca ggg gac gac cta | 624 |
| Val Asn Pro Cys Phe Val Gln Ile Thr Gly Phe Thr Gly Asp Asp Leu |     |
| 195 200 205   |     |
| cgg gta tat ttc atg aga cac ttt gat gac tca agt gaa gtt gag aaa | 672 |
| Arg Val Tyr Phe Met Arg His Phe Asp Asp Ser Ser Glu Val Glu Lys |     |
| 210 215 220   |     |
| atc ctg cag cag cta aga aaa aac gaa act ctc ttt cat tcc tgc agt | 720 |
| Ile Leu Gln Gln Leu Arg Lys Asn Glu Thr Leu Phe His Ser Cys Ser |     |
| 225 230 235 240   |     |

A1

gcc ccc atg gtg tgt tgg acc gta tgt tcc tgt ctg aag cag ccg aag 768  
 Ala Pro Met Val Cys Trp Thr Val Cys Ser Cys Leu Lys Gln Pro Lys  
 245 250 255

gtg agg tat tac gat ctc cag tca atc act cag act acc acc agt ctg 816  
 Val Arg Tyr Tyr Asp Leu Gln Ser Ile Thr Gln Thr Thr Thr Ser Leu  
 260 265 270

tat gcc tat ttt ttc tcc aac ttg ttc tcc aca gca gag gta gat ttg 864  
 Tyr Ala Tyr Phe Phe Ser Asn Leu Phe Ser Thr Ala Glu Val Asp Leu  
 275 280 285

gca gat gac agc tgg cca gga caa tgg agg gcc ctc tgc agt ctg gcc 912  
 Ala Asp Asp Ser Trp Pro Gly Gln Trp Arg Ala Leu Cys Ser Leu Ala  
 290 295 300

ata gaa ggg ctg tgg tct atg aac ttc acg ttt aac aaa gaa gac act 960  
 Ile Glu Gly Leu Trp Ser Met Asn Phe Thr Phe Asn Lys Glu Asp Thr  
 305 310 315 320

gag atc gag ggc ctg gaa gtg cct ttc att gat tct ctc tac gag ttc 1008  
 Glu Ile Glu Gly Leu Glu Val Pro Phe Ile Asp Ser Leu Tyr Glu Phe  
 325 330 335

aat att ctt caa aag atc aat gac tgt ggg ggt tgc act act ttc acc 1056  
 Asn Ile Leu Gln Lys Ile Asn Asp Cys Gly Gly Cys Thr Thr Phe Thr  
 340 345 350

cac cta agt ttc cag gag ttt ttt gca gcc atg tcc ttt gtg cta gag 1104  
 His Leu Ser Phe Gln Glu Phe Phe Ala Ala Met Ser Phe Val Leu Glu  
 355 360 365

gaa cct aga gaa ttc cct ccc cat tcc aca aag cca caa gag atg aag 1152  
 Glu Pro Arg Glu Phe Pro Pro His Ser Thr Lys Pro Gln Glu Met Lys  
 370 375 380

atg tta ctg caa cac gtc ttg ctt gac aaa gaa gcc tac tgg act cca 1200  
 Met Leu Leu Gln His Val Leu Leu Asp Lys Glu Ala Tyr Trp Thr Pro  
 385 390 395 400

gtg gtt ctg ttc ttc ttt ggt ctt tta aat aaa aac ata gca aga gaa 1248  
 Val Val Leu Phe Phe Phe Gly Leu Leu Asn Lys Asn Ile Ala Arg Glu  
 405 410 415

ctg gaa gat act ttg cat tgt aaa ata tct ccc agg gta atg gag gaa 1296  
 Leu Glu Asp Thr Leu His Cys Lys Ile Ser Pro Arg Val Met Glu Glu  
 420 425 430

tta tta aag tgg gga gaa gag tta ggt aag gct gaa agt gcc tct ctc 1344  
 Leu Leu Lys Trp Gly Glu Glu Leu Gly Lys Ala Glu Ser Ala Ser Leu  
 435 440 445

caa ttt cac att cta cga ctt ttt cac tgc cta cac gag tcc cag gag 1392  
 Gln Phe His Ile Leu Arg Leu Phe His Cys Leu His Glu Ser Gln Glu  
 450 455 460

A1

gaa gac ttc aca aag aag atg ttg ggt cgt atc ttt gaa gtt gac ctt 1440  
 Glu Asp Phe Thr Lys Lys Met Leu Gly Arg Ile Phe Glu Val Asp Leu  
 465 470 475 480

aat att ttg gag gac gaa gaa ctc caa gct tct tca ttt tgc cta aag 1488  
 Asn Ile Leu Glu Asp Glu Glu Leu Gln Ala Ser Ser Phe Cys Leu Lys  
 485 490 495

cac tgt aaa agg tta aat aag cta agg ctt tct gtt agc agt cac atc 1536  
 His Cys Lys Arg Leu Asn Lys Leu Arg Leu Ser Val Ser Ser His Ile  
 500 505 510

ctt gaa agg gac ttg gaa att ctg gag tga 1566  
 Leu Glu Arg Asp Leu Glu Ile Leu Glu  
 515 520

<210> 6

<211> 521

<212> PRT

<213> Homo sapiens

<400> 6

Met Lys Ala Glu Leu Leu Glu Thr Trp Asp Asn Ile Ser Trp Pro Lys  
 1 5 10 15  
 Asp His Val Tyr Ile Arg Asn Thr Ser Lys Asp Glu His Glu Glu Leu  
 20 25 30  
 Gln Arg Leu Leu Asp Pro Asn Arg Thr Arg Ala Gln Ala Gln Thr Ile  
 35 40 45  
 Val Leu Val Gly Arg Ala Gly Val Gly Lys Thr Thr Leu Ala Met Gln  
 50 55 60  
 Ala Met Leu His Trp Ala Asn Gly Val Leu Phe Gln Gln Arg Phe Ser  
 65 70 75 80  
 Tyr Val Phe Tyr Leu Ser Cys His Lys Ile Arg Tyr Met Lys Glu Thr  
 85 90 95  
 Thr Phe Ala Glu Leu Ile Ser Leu Asp Trp Pro Asp Phe Asp Ala Pro  
 100 105 110  
 Ile Glu Glu Phe Met Ser Gln Pro Glu Lys Leu Leu Phe Ile Ile Asp  
 115 120 125  
 Gly Phe Glu Glu Ile Ile Ile Ser Glu Ser Arg Ser Glu Ser Leu Asp  
 130 135 140  
 Asp Gly Ser Pro Cys Thr Asp Trp Tyr Gln Glu Leu Pro Val Thr Lys  
 145 150 155 160  
 Ile Leu His Ser Leu Leu Lys Lys Glu Leu Val Pro Leu Ala Thr Leu  
 165 170 175  
 Leu Ile Thr Ile Lys Thr Trp Phe Val Arg Asp Leu Lys Ala Ser Leu  
 180 185 190  
 Val Asn Pro Cys Phe Val Gln Ile Thr Gly Phe Thr Gly Asp Asp Leu  
 195 200 205  
 Arg Val Tyr Phe Met Arg His Phe Asp Asp Ser Ser Glu Val Glu Lys  
 210 215 220  
 Ile Leu Gln Gln Leu Arg Lys Asn Glu Thr Leu Phe His Ser Cys Ser  
 225 230 235 240  
 Ala Pro Met Val Cys Trp Thr Val Cys Ser Cys Leu Lys Gln Pro Lys  
 245 250 255  
 Val Arg Tyr Tyr Asp Leu Gln Ser Ile Thr Gln Thr Thr Thr Ser Leu  
 260 265 270

A1

Tyr Ala Tyr Phe Phe Ser Asn Leu Phe Ser Thr Ala Glu Val Asp Leu  
 275 280 285  
 Ala Asp Asp Ser Trp Pro Gly Gln Trp Arg Ala Leu Cys Ser Leu Ala  
 290 295 300  
 Ile Glu Gly Leu Trp Ser Met Asn Phe Thr Phe Asn Lys Glu Asp Thr  
 305 310 315 320  
 Glu Ile Glu Gly Leu Glu Val Pro Phe Ile Asp Ser Leu Tyr Glu Phe  
 325 330 335  
 Asn Ile Leu Gln Lys Ile Asn Asp Cys Gly Gly Cys Thr Thr Phe Thr  
 340 345 350  
 His Leu Ser Phe Gln Glu Phe Phe Ala Ala Met Ser Phe Val Leu Glu  
 355 360 365  
 Glu Pro Arg Glu Phe Pro Pro His Ser Thr Lys Pro Gln Glu Met Lys  
 370 375 380  
 Met Leu Leu Gln His Val Leu Leu Asp Lys Glu Ala Tyr Trp Thr Pro  
 385 390 395 400  
 Val Val Leu Phe Phe Phe Gly Leu Leu Asn Lys Asn Ile Ala Arg Glu  
 405 410 415  
 Leu Glu Asp Thr Leu His Cys Lys Ile Ser Pro Arg Val Met Glu Glu  
 420 425 430  
 Leu Leu Lys Trp Gly Glu Glu Leu Gly Lys Ala Glu Ser Ala Ser Leu  
 435 440 445  
 Gln Phe His Ile Leu Arg Leu Phe His Cys Leu His Glu Ser Gln Glu  
 450 455 460  
 Glu Asp Phe Thr Lys Lys Met Leu Gly Arg Ile Phe Glu Val Asp Leu  
 465 470 475 480  
 Asn Ile Leu Glu Asp Glu Glu Leu Gln Ala Ser Ser Phe Cys Leu Lys  
 485 490 495  
 His Cys Lys Arg Leu Asn Lys Leu Arg Leu Ser Val Ser Ser His Ile  
 500 505 510  
 Leu Glu Arg Asp Leu Glu Ile Leu Glu  
 515 520

<210> 7  
 <211> 2575  
 <212> DNA  
 <213> Homo sapiens

<220>  
 <221> CDS  
 <222> (2)...(2575)

<400> 7  
 c agc cgc tta tgg tcc agc aag tct gtc act gag att cac cta tac ttt 49  
 Ser Arg Leu Trp Ser Ser Lys Ser Val Thr Glu Ile His Leu Tyr Phe  
 1 5 10 15  
  
 gag gag gaa gtc aag caa gaa gaa tgt gac cat ttg gac cgc ctt ttt 97  
 Glu Glu Glu Val Lys Gln Glu Glu Cys Asp His Leu Asp Arg Leu Phe  
 20 25 30  
  
 gct ccc aag gaa gct ggg aaa cag cca cgt aca gtg atc att caa gga 145  
 Ala Pro Lys Glu Ala Gly Lys Gln Pro Arg Thr Val Ile Ile Gln Gly  
 35 40 45

cca caa gga att gga aaa acg aca ctc ctg atg aag ctg atg atg gcc 193  
 Pro Gln Gly Ile Gly Lys Thr Thr Leu Leu Met Lys Leu Met Met Ala  
 50 55 60

tgg tcg gac aac aag atc ttt cgg gat agg ttc ctg tac acg ttc tat 241  
 Trp Ser Asp Asn Lys Ile Phe Arg Asp Arg Phe Leu Tyr Thr Phe Tyr  
 65 70 75 80

ttc tgc tgc aga gaa ctg agg gag ttg ccg cca acg agt ttg gct gac 289  
 Phe Cys Cys Arg Glu Leu Arg Glu Leu Pro Pro Thr Ser Leu Ala Asp  
 85 90 95

ttg att tcc aga gag tgg cct gac ccc gct gct cct ata aca gag atc 337  
 Leu Ile Ser Arg Glu Trp Pro Asp Pro Ala Ala Pro Ile Thr Glu Ile  
 100 105 110

gtg tct caa ccg gag aga ctc ttg ttc gtc atc gac agc ttc gaa gag 385  
 Val Ser Gln Pro Glu Arg Leu Leu Phe Val Ile Asp Ser Phe Glu Glu  
 115 120 125

ctg cag ggc ggc ttg aac gaa ccc gat tcg gat ctg tgt ggt gac ttg 433  
 Leu Gln Gly Gly Leu Asn Glu Pro Asp Ser Asp Leu Cys Gly Asp Leu  
 130 135 140

atg gag aaa cgg ccg gtg cag gtg ctt ctg agc agt ttg ctg agg aag 481  
 Met Glu Lys Arg Pro Val Gln Val Leu Leu Ser Ser Leu Leu Arg Lys  
 145 150 155 160

aag atg ctc ccg gag gcc tcc ctg ctc atc gct atc aaa ccc gtg tgc 529  
 Lys Met Leu Pro Glu Ala Ser Leu Leu Ile Ala Ile Lys Pro Val Cys  
 165 170 175

ccg aag gag ctc ccg gat cag gtg acg atc tca gaa atc tac cag ccc 577  
 Pro Lys Glu Leu Arg Asp Gln Val Thr Ile Ser Glu Ile Tyr Gln Pro  
 180 185 190

cgg gga ttc aac gag agt gat agg tta gtg tat ttc tgc tgt ttc ttc 625  
 Arg Gly Phe Asn Glu Ser Asp Arg Leu Val Tyr Phe Cys Cys Phe Phe  
 195 200 205

aaa gac ccg aaa aga gcc atg gaa gcc ttc aat ctt gta aga gaa agt 673  
 Lys Asp Pro Lys Arg Ala Met Glu Ala Phe Asn Leu Val Arg Glu Ser  
 210 215 220

gaa cag ctg ttt tcc ata tgc caa atc ccg ctc ctc tgc tgg atc ctg 721  
 Glu Gln Leu Phe Ser Ile Cys Gln Ile Pro Leu Leu Cys Trp Ile Leu  
 225 230 235 240

tgt acc agt ctg aag caa gag atg cag aaa gga aaa gac ctg gcc ctg 769  
 Cys Thr Ser Leu Lys Gln Glu Met Gln Lys Gly Lys Asp Leu Ala Leu  
 245 250 255

acc tgc cag agc act acc tct gtg tac tcc tct ttc gtc ttt aac ctg 817  
 Thr Cys Gln Ser Thr Thr Ser Val Tyr Ser Ser Phe Val Phe Asn Leu  
 260 265 270

A1



|   |      |
|---|------|
| ttc aca cct gag ggt gcc gag ggc ccg act ccg caa acc cag cac cag<br>Phe Thr Pro Glu Gly Ala Glu Gly Pro Thr Pro Gln Thr Gln His Gln<br>275 280 285     | 865  |
| ctg aag gcc ctg tgc tcc ctg gct gca gag ggt atg tgg aca gac aca<br>Leu Lys Ala Leu Cys Ser Leu Ala Ala Glu Gly Met Trp Thr Asp Thr<br>290 295 300     | 913  |
| ttt gag ttt tgt gaa gac gac ctc cgg aga aat ggg gtt gtt gac gct<br>Phe Glu Phe Cys Glu Asp Asp Leu Arg Arg Asn Gly Val Val Asp Ala<br>305 310 315 320 | 961  |
| gac atc cct gcg ctg ctg gcc acc aag ata ctt ctg aag tac ggg gag<br>Asp Ile Pro Ala Leu Leu Gly Thr Lys Ile Leu Leu Lys Tyr Gly Glu<br>325 330 335     | 1009 |
| cgt gag agc tcc tac gtg ttc ctc cac gtg tgt atc cag gag ttc tgt<br>Arg Glu Ser Ser Tyr Val Phe Leu His Val Cys Ile Gln Glu Phe Cys<br>340 345 350     | 1057 |
| gcc gcc ttg ttc tat ttg ctc aag agc cac ctt gat cat cct cac cca<br>Ala Ala Leu Phe Tyr Leu Leu Lys Ser His Leu Asp His Pro His Pro<br>355 360 365     | 1105 |
| gct gtg aga tgt gta cag gaa ttg cta gtt gcc aat ttt gaa aaa gca<br>Ala Val Arg Cys Val Gln Glu Leu Leu Val Ala Asn Phe Glu Lys Ala<br>370 375 380     | 1153 |
| agg aga gca cat tgg att ttt ttg ggg tgt ttt cta act ggc ctt tta<br>Arg Arg Ala His Trp Ile Phe Leu Gly Cys Phe Leu Thr Gly Leu Leu<br>385 390 395 400 | 1201 |
| aat aaa aag gaa caa gaa aaa ctg gat gcg ttt ttt ggc ttc caa ctg<br>Asn Lys Lys Glu Gln Glu Lys Leu Asp Ala Phe Phe Gly Phe Gln Leu<br>405 410 415     | 1249 |
| tcc caa gag ata aag cag caa att cac cag tgc ctg aag agc tta ggg<br>Ser Gln Glu Ile Lys Gln Gln Ile His Gln Cys Leu Lys Ser Leu Gly<br>420 425 430     | 1297 |
| gag cgt ggc aat cct cag gga cag gtg gat tcc ttg gcg ata ttt tac<br>Glu Arg Gly Asn Pro Gln Gly Gln Val Asp Ser Leu Ala Ile Phe Tyr<br>435 440 445     | 1345 |
| tgt ctc ttt gaa atg cag gat cct gcc ttt gtg aag cag gca gtg aac<br>Cys Leu Phe Glu Met Gln Asp Pro Ala Phe Val Lys Gln Ala Val Asn<br>450 455 460     | 1393 |
| ctc ctc caa gaa gct aac ttt cat att att gac aac gtg gac ttg gtg<br>Leu Leu Gln Glu Ala Asn Phe His Ile Ile Asp Asn Val Asp Leu Val<br>465 470 475 480 | 1441 |
| gtt tct gcc tac tgc tta aaa tac tgc tcc agc ttg agg aaa ctc tgt<br>Val Ser Ala Tyr Cys Leu Lys Tyr Cys Ser Ser Leu Arg Lys Leu Cys<br>485 490 495     | 1489 |

A1

ttt tcc gtt caa aat gtc ttt aag aaa gag gat gaa cac agc tct acg 1537  
 Phe Ser Val Gln Asn Val Phe Lys Lys Glu Asp Glu His Ser Ser Thr  
 500 505 510

tcg gat tac agc ctc atc tgt tgg cat cac atc tgc tct gtg ctc acc 1585  
 Ser Asp Tyr Ser Leu Ile Cys Trp His His Ile Cys Ser Val Leu Thr  
 515 520 525

acc agc ggg cac ctc aga gag ctc cag gtg cag gac agc acc ctc agc 1633  
 Thr Ser Gly His Leu Arg Glu Leu Gln Val Gln Asp Ser Thr Leu Ser  
 530 535 540

gag tcg acc ttt gtg acc tgg tgt aac cag ctg agg cat ccc agc tgt 1681  
 Glu Ser Thr Phe Val Thr Trp Cys Asn Gln Leu Arg His Pro Ser Cys  
 545 550 555 560

cgc ctt cag aag ctt gga ata aat aac gtt tcc ttt tct ggc cag agt 1729  
 Arg Leu Gln Lys Leu Gly Ile Asn Asn Val Ser Phe Ser Gly Gln Ser  
 565 570 575

gtt ctg ctc ttt gag gtg ctc ttt tat cag cca gac ttg aaa tac ctg 1777  
 Val Leu Leu Phe Glu Val Leu Phe Tyr Gln Pro Asp Leu Lys Tyr Leu  
 580 585 590

agc ttc acc ctc acg aaa ctc tct cgt gat gac atc agg tcc ctc tgt 1825  
 Ser Phe Thr Leu Thr Lys Leu Ser Arg Asp Asp Ile Arg Ser Leu Cys  
 595 600 605

A1 gat gcc ttg aac tac cca gca ggc aac gtc aaa gag cta gcg ctg gta 1873  
 Asp Ala Leu Asn Tyr Pro Ala Gly Asn Val Lys Glu Leu Ala Leu Val  
 610 615 620

aat tgt cac ctc tca ccc att gat tgt gaa gtc ctt gct ggc ctt cta 1921  
 Asn Cys His Leu Ser Pro Ile Asp Cys Glu Val Leu Ala Gly Leu Leu  
 625 630 635 640

acc aac aac aag aag ctg acg tat ctg aat gta tcc tgc aac cag tta 1969  
 Thr Asn Asn Lys Lys Leu Thr Tyr Leu Asn Val Ser Cys Asn Gln Leu  
 645 650 655

gac aca ggc gtg ccc ctt ttg tgt gaa gcc ctg tgc agc cca gac acg 2017  
 Asp Thr Gly Val Pro Leu Leu Cys Glu Ala Leu Cys Ser Pro Asp Thr  
 660 665 670

gtc ctg gta tac ctg atg ttg gct ttc tgc cac ctc agc gag cag tgc 2065  
 Val Leu Val Tyr Leu Met Leu Ala Phe Cys His Leu Ser Glu Gln Cys  
 675 680 685

tgc gaa tac atc tct gaa atg ctt ctg cgt aac aag agc gtg cgc tat 2113  
 Cys Glu Tyr Ile Ser Glu Met Leu Leu Arg Asn Lys Ser Val Arg Tyr  
 690 695 700

cta gac ctc agt gcc aat gtc ctg aag gac gaa gga ctg aaa act ctc 2161  
 Leu Asp Leu Ser Ala Asn Val Leu Lys Asp Glu Gly Leu Lys Thr Leu  
 705 710 715 720

tgc gag gcc ttg aaa cat ccg gac tgc tgc ctg gat tca ctg tgt ttg 2209  
 Cys Glu Ala Leu Lys His Pro Asp Cys Cys Leu Asp Ser Leu Cys Leu  
                   725                                  730                                  735

gta aaa tgt ttt atc act gct gct ggc tgt gaa gac ctc gcc tct gct 2257  
 Val Lys Cys Phe Ile Thr Ala Ala Gly Cys Glu Asp Leu Ala Ser Ala  
                   740                                  745                                  750

ctc atc agc aat caa aac ctg aag att ctg caa att ggg tgc aat gaa 2305  
 Leu Ile Ser Asn Gln Asn Leu Lys Ile Leu Gln Ile Gly Cys Asn Glu  
                   755                                  760                                  765

atc gga gat gtg ggt gtg cag ctg ttg tgt cgg gct ctg acg cat acg 2353  
 Ile Gly Asp Val Gly Val Gln Leu Leu Cys Arg Ala Leu Thr His Thr  
                   770                                  775                                  780

gat tgc cgc tta gag att ctt ggg ttg gaa gaa tgt ggg tta acg agc 2401  
 Asp Cys Arg Leu Glu Ile Leu Gly Leu Glu Glu Cys Gly Leu Thr Ser  
                   785                                  790                                  795                                  800

acc tgc tgt aag gat ctc gcg tct gtt ctc acc tgc agt aag acc ctg 2449  
 Thr Cys Cys Lys Asp Leu Ala Ser Val Leu Thr Cys Ser Lys Thr Leu  
                                   805                                  810                                  815

cag cag ctc aac ctg acc ttg aac acc ttg gac cac aca ggg gtg gtt 2497  
 Gln Gln Leu Asn Leu Thr Leu Asn Thr Leu Asp His Thr Gly Val Val  
                                   820                                  825                                  830

gta ctc tgt gag gcc ctg aga cac cca gag tgt gcc ctg cag gtg ctc 2545  
 Val Leu Cys Glu Ala Leu Arg His Pro Glu Cys Ala Leu Gln Val Leu  
                   835                                  840                                  845

ggg gtt gtt gca gga gta aga acc aag cag 2575  
 Gly Val Val Ala Gly Val Arg Thr Lys Gln  
                   850                                  855

<210> 8

<211> 858

<212> PRT

<213> Homo sapiens

<400> 8

Ser Arg Leu Trp Ser Ser Lys Ser Val Thr Glu Ile His Leu Tyr Phe  
   1                                  5                                  10                                  15  
 Glu Glu Glu Val Lys Gln Glu Glu Cys Asp His Leu Asp Arg Leu Phe  
                   20                                  25                                  30  
 Ala Pro Lys Glu Ala Gly Lys Gln Pro Arg Thr Val Ile Ile Gln Gly  
                   35                                  40                                  45  
 Pro Gln Gly Ile Gly Lys Thr Thr Leu Leu Met Lys Leu Met Met Ala  
                   50                                  55                                  60  
 Trp Ser Asp Asn Lys Ile Phe Arg Asp Arg Phe Leu Tyr Thr Phe Tyr  
                   65                                  70                                  75                                  80  
 Phe Cys Cys Arg Glu Leu Arg Glu Leu Pro Pro Thr Ser Leu Ala Asp  
                                   85                                  90                                  95  
 Leu Ile Ser Arg Glu Trp Pro Asp Pro Ala Ala Pro Ile Thr Glu Ile  
                   100                                  105                                  110

A1

Val Ser Gln Pro Glu Arg Leu Leu Phe Val Ile Asp Ser Phe Glu Glu  
 115 120 125  
 Leu Gln Gly Gly Leu Asn Glu Pro Asp Ser Asp Leu Cys Gly Asp Leu  
 130 135 140  
 Met Glu Lys Arg Pro Val Gln Val Leu Leu Ser Ser Leu Leu Arg Lys  
 145 150 155 160  
 Lys Met Leu Pro Glu Ala Ser Leu Leu Ile Ala Ile Lys Pro Val Cys  
 165 170 175  
 Pro Lys Glu Leu Arg Asp Gln Val Thr Ile Ser Glu Ile Tyr Gln Pro  
 180 185 190  
 Arg Gly Phe Asn Glu Ser Asp Arg Leu Val Tyr Phe Cys Cys Phe Phe  
 195 200 205  
 Lys Asp Pro Lys Arg Ala Met Glu Ala Phe Asn Leu Val Arg Glu Ser  
 210 215 220  
 Glu Gln Leu Phe Ser Ile Cys Gln Ile Pro Leu Leu Cys Trp Ile Leu  
 225 230 235 240  
 Cys Thr Ser Leu Lys Gln Glu Met Gln Lys Gly Lys Asp Leu Ala Leu  
 245 250 255  
 Thr Cys Gln Ser Thr Thr Ser Val Tyr Ser Ser Phe Val Phe Asn Leu  
 260 265 270  
 Phe Thr Pro Glu Gly Ala Glu Gly Pro Thr Pro Gln Thr Gln His Gln  
 275 280 285  
 Leu Lys Ala Leu Cys Ser Leu Ala Ala Glu Gly Met Trp Thr Asp Thr  
 290 295 300  
 Phe Glu Phe Cys Glu Asp Asp Leu Arg Arg Asn Gly Val Val Asp Ala  
 305 310 315 320  
 Asp Ile Pro Ala Leu Leu Gly Thr Lys Ile Leu Leu Lys Tyr Gly Glu  
 325 330 335  
 Arg Glu Ser Ser Tyr Val Phe Leu His Val Cys Ile Gln Glu Phe Cys  
 340 345 350  
 Ala Ala Leu Phe Tyr Leu Leu Lys Ser His Leu Asp His Pro His Pro  
 355 360 365  
 Ala Val Arg Cys Val Gln Glu Leu Leu Val Ala Asn Phe Glu Lys Ala  
 370 375 380  
 Arg Arg Ala His Trp Ile Phe Leu Gly Cys Phe Leu Thr Gly Leu Leu  
 385 390 395 400  
 Asn Lys Lys Glu Gln Glu Lys Leu Asp Ala Phe Phe Gly Phe Gln Leu  
 405 410 415  
 Ser Gln Glu Ile Lys Gln Gln Ile His Gln Cys Leu Lys Ser Leu Gly  
 420 425 430  
 Glu Arg Gly Asn Pro Gln Gly Gln Val Asp Ser Leu Ala Ile Phe Tyr  
 435 440 445  
 Cys Leu Phe Glu Met Gln Asp Pro Ala Phe Val Lys Gln Ala Val Asn  
 450 455 460  
 Leu Leu Gln Glu Ala Asn Phe His Ile Ile Asp Asn Val Asp Leu Val  
 465 470 475 480  
 Val Ser Ala Tyr Cys Leu Lys Tyr Cys Ser Ser Leu Arg Lys Leu Cys  
 485 490 495  
 Phe Ser Val Gln Asn Val Phe Lys Lys Glu Asp Glu His Ser Ser Thr  
 500 505 510  
 Ser Asp Tyr Ser Leu Ile Cys Trp His His Ile Cys Ser Val Leu Thr  
 515 520 525  
 Thr Ser Gly His Leu Arg Glu Leu Gln Val Gln Asp Ser Thr Leu Ser  
 530 535 540  
 Glu Ser Thr Phe Val Thr Trp Cys Asn Gln Leu Arg His Pro Ser Cys  
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A1

A1

<400> 10  
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Glu Gly Ala Arg Ala Leu Ala Glu Ala Leu Lys Ser  
 20 25

<210> 11  
 <211> 28  
 <212> PRT  
 <213> Homo sapiens

<400> 11  
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 Tyr Asn Asp Glu Ser Gln Glu Val Gln Arg His Phe  
 20 25

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<220>  
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 atg aca tcg ccc cag cta gag tgg act ctg cag acc ctt ctg gag cag 106  
 Met Thr Ser Pro Gln Leu Glu Trp Thr Leu Gln Thr Leu Leu Glu Gln  
 1 5 10 15  
 ctg aac gag gat gaa tta aag agt ttc aaa tcc ctt tta tgg gct ttt 154  
 Leu Asn Glu Asp Glu Leu Lys Ser Phe Lys Ser Leu Leu Trp Ala Phe  
 20 25 30  
 ccc ctc gaa gac gtg cta cag aag acc cca tgg tct gag gtg gaa gag 202  
 Pro Leu Glu Asp Val Leu Gln Lys Thr Pro Trp Ser Glu Val Glu Glu  
 35 40 45  
 gct gat ggc aag aaa ctg gca gaa att ctg gtc aac acc tcc tca gaa 250  
 Ala Asp Gly Lys Lys Leu Ala Glu Ile Leu Val Asn Thr Ser Ser Glu  
 50 55 60  
 aat tgg ata agg aat gcg act gtg aac atc ttg gaa gag atg aat ctc 298  
 Asn Trp Ile Arg Asn Ala Thr Val Asn Ile Leu Glu Glu Met Asn Leu  
 65 70 75 80  
 acg gaa ttg tgt aag atg gca aag gct gag atg atg gag gac gga cag 346  
 Thr Glu Leu Cys Lys Met Ala Lys Ala Glu Met Met Glu Asp Gly Gln  
 85 90 95  
 gtg caa gaa ata gat aat cct gag ctg gga gat gca gaa gaa gac tcg 394  
 Val Gln Glu Ile Asp Asn Pro Glu Leu Gly Asp Ala Glu Glu Asp Ser  
 100 105 110  
 gag tta gca aag cca ggt gaa aag gaa gga tgg aga aat tca atg gag 442  
 Glu Leu Ala Lys Pro Gly Glu Lys Glu Gly Trp Arg Asn Ser Met Glu  
 115 120 125

|   |      |
|---|------|
| aaa cag tct ttg gtc tgg aag aac acc ttt tgg caa gga gac att gac<br>Lys Gln Ser Leu Val Trp Lys Asn Thr Phe Trp Gln Gly Asp Ile Asp<br>130 135 140     | 490  |
| aat ttc cat gac gac gtc act ctg aga aac caa cgg ttc att cca ttc<br>Asn Phe His Asp Asp Val Thr Leu Arg Asn Gln Arg Phe Ile Pro Phe<br>145 150 155 160 | 538  |
| ttg aat ccc aga aca ccc agg aag cta aca cct tac acg gtg gtg ctg<br>Leu Asn Pro Arg Thr Pro Arg Lys Leu Thr Pro Tyr Thr Val Val Leu<br>165 170 175     | 586  |
| cac ggc ccc gca ggc gtg ggg aaa acc acg ctg gcc aaa aag tgt atg<br>His Gly Pro Ala Gly Val Gly Lys Thr Thr Leu Ala Lys Lys Cys Met<br>180 185 190     | 634  |
| ctg gac tgg aca gac tgc aac ctc agc ccg acg ctc aga tac gcg ttc<br>Leu Asp Trp Thr Asp Cys Asn Leu Ser Pro Thr Leu Arg Tyr Ala Phe<br>195 200 205     | 682  |
| tac ctc agc tgc aag gag ctc agc cgc atg ggc ccc tgc agt ttt gca<br>Tyr Leu Ser Cys Lys Glu Leu Ser Arg Met Gly Pro Cys Ser Phe Ala<br>210 215 220     | 730  |
| gag ctg atc tcc aaa gac tgg cct gaa ttg cag gat gac att cca agc<br>Glu Leu Ile Ser Lys Asp Trp Pro Glu Leu Gln Asp Asp Ile Pro Ser<br>225 230 235 240 | 778  |
| atc cta gcc caa gca cag aga atc ctg ttc gtg gtc gat ggc ctt gat<br>Ile Leu Ala Gln Ala Gln Arg Ile Leu Phe Val Val Asp Gly Leu Asp<br>245 250 255     | 826  |
| gag ctg aaa gtc cca cct ggg gcg ctg atc cag gac atc tgc ggg gac<br>Glu Leu Lys Val Pro Pro Gly Ala Leu Ile Gln Asp Ile Cys Gly Asp<br>260 265 270     | 874  |
| tgg gag aag aag aag ccg gtg ccc gtc ctc ctg ggg agt ttg ctg aag<br>Trp Glu Lys Lys Lys Pro Val Pro Val Leu Leu Gly Ser Leu Leu Lys<br>275 280 285     | 922  |
| agg aag atg tta ccc agg gca gcc ttg ctg gtc acc acg cgg ccc agg<br>Arg Lys Met Leu Pro Arg Ala Ala Leu Leu Val Thr Thr Arg Pro Arg<br>290 295 300     | 970  |
| gca ctg agg gac ctc cag ctc ctg gcg cag cag ccg atc tac gta agg<br>Ala Leu Arg Asp Leu Gln Leu Leu Ala Gln Gln Pro Ile Tyr Val Arg<br>305 310 315 320 | 1018 |
| gtg gag ggc ttc ctg gag gag gac agg agg gcc tat ttc ctg aga cac<br>Val Glu Gly Phe Leu Glu Glu Asp Arg Arg Ala Tyr Phe Leu Arg His<br>325 330 335     | 1066 |
| ttt gga gac gag gac caa gcc atg cgt gcc ttt gag cta atg agg agc<br>Phe Gly Asp Glu Asp Gln Ala Met Arg Ala Phe Glu Leu Met Arg Ser<br>340 345 350     | 1114 |

A1

aac gcg gcc ctg ttc cag ctg ggc tcg gcc ccc gcg gtg tgc tgg att 1162  
 Asn Ala Ala Leu Phe Gln Leu Gly Ser Ala Pro Ala Val Cys Trp Ile  
 355 360 365

gtg tgc acg act ctg aag ctg cag atg gag aag ggg gag gac ccg gtc 1210  
 Val Cys Thr Thr Leu Lys Leu Gln Met Glu Lys Gly Glu Asp Pro Val  
 370 375 380

ccc acc tgc ctc acc cgc acg ggg ctg ttc ctg cgt ttc ctc tgc agc 1258  
 Pro Thr Cys Leu Thr Arg Thr Gly Leu Phe Leu Arg Phe Leu Cys Ser  
 385 390 395 400

cgg ttc ccg cag ggc gca cag ctg cgg ggc gcg ctg cgg acg ctg agc 1306  
 Arg Phe Pro Gln Gly Ala Gln Leu Arg Gly Ala Leu Arg Thr Leu Ser  
 405 410 415

ctc ctg gcc gcg cag ggc ctg tgg gcg cag atg tcc gtg ttc cac cga 1354  
 Leu Leu Ala Ala Gln Gly Leu Trp Ala Gln Met Ser Val Phe His Arg  
 420 425 430

gag gac ctg gaa agg ctc ggg gtg cag gag tcc gac ctc cgt ctg ttc 1402  
 Glu Asp Leu Glu Arg Leu Gly Val Gln Glu Ser Asp Leu Arg Leu Phe  
 435 440 445

ctg gac gga gac atc ctc cgc cag gac aga gtc tcc aaa ggc tgc tac 1450  
 Leu Asp Gly Asp Ile Leu Arg Gln Asp Arg Val Ser Lys Gly Cys Tyr  
 450 455 460

tcc ttc atc cac ctc agc ttc cag cag ttt ctc act gcc ctg ttc tac 1498  
 Ser Phe Ile His Leu Ser Phe Gln Gln Phe Leu Thr Ala Leu Phe Tyr  
 465 470 475 480

gcc ctg gag aag gag gag ggg gag gac agg gac ggc cac gcc tgg gac 1546  
 Ala Leu Glu Lys Glu Glu Gly Glu Asp Arg Asp Gly His Ala Trp Asp  
 485 490 495

atc ggg gac gta cag aag ctg ctt tcc gga gaa gaa aga ctc aag aac 1594  
 Ile Gly Asp Val Gln Lys Leu Leu Ser Gly Glu Glu Arg Leu Lys Asn  
 500 505 510

ccc gac ctg att caa gta gga cac ttc tta ttc ggc ctc gct aac gag 1642  
 Pro Asp Leu Ile Gln Val Gly His Phe Leu Phe Gly Leu Ala Asn Glu  
 515 520 525

aag aga gcc aag gag ttg gag gcc act ttt ggc tgc cgg atg tca ccg 1690  
 Lys Arg Ala Lys Glu Leu Glu Ala Thr Phe Gly Cys Arg Met Ser Pro  
 530 535 540

gac atc aaa cag gaa ttg ctg caa tgc aaa gca cat ctt cat gca aat 1738  
 Asp Ile Lys Gln Glu Leu Leu Gln Cys Lys Ala His Leu His Ala Asn  
 545 550 555 560

aag ccc tta tcc gtg acc gac ctg aag gag gtc ttg ggc tgc ctg tat 1786  
 Lys Pro Leu Ser Val Thr Asp Leu Lys Glu Val Leu Gly Cys Leu Tyr  
 565 570 575



gag tct cag gag gag gag ctg gcg aag gtg gtg gtg gcc ccg ttc aag 1834  
 Glu Ser Gln Glu Glu Glu Leu Ala Lys Val Val Val Ala Pro Phe Lys  
 580 585 590

gaa att tct att cac ctg aca aat act tct gaa gtg atg cat tgt tcc 1882  
 Glu Ile Ser Ile His Leu Thr Asn Thr Ser Glu Val Met His Cys Ser  
 595 600 605

ttc agc ctg aag cat tgt caa gac ttg cag aaa ctc tca ctg cag gta 1930  
 Phe Ser Leu Lys His Cys Gln Asp Leu Gln Lys Leu Ser Leu Gln Val  
 610 615 620

gca aag ggg gtg ttc ctg gag aat tac atg gat ttt gaa ctg gac att 1978  
 Ala Lys Gly Val Phe Leu Glu Asn Tyr Met Asp Phe Glu Leu Asp Ile  
 625 630 635 640

gaa ttt gaa agg tgc act tac cta acc att ccg aac tgg gct cgg cag 2026  
 Glu Phe Glu Arg Cys Thr Tyr Leu Thr Ile Pro Asn Trp Ala Arg Gln  
 645 650 655

gat ctt cgc tct ctt cgc ctc tgg aca gat ttc tgc tct ctc ttc agc 2074  
 Asp Leu Arg Ser Leu Arg Leu Trp Thr Asp Phe Cys Ser Leu Phe Ser  
 660 665 670

tca aac agc aac ctc aag ttt ctg gaa gtg aaa caa agc ttc ctg agt 2122  
 Ser Asn Ser Asn Leu Lys Phe Leu Glu Val Lys Gln Ser Phe Leu Ser  
 675 680 685

A1 gac tct tct gtg cgg att ctt tgt gac cac gta acc cgt agc acc tgt 2170  
 Asp Ser Ser Val Arg Ile Leu Cys Asp His Val Thr Arg Ser Thr Cys  
 690 695 700

cat ctg cag aaa gtg gag att aaa aac gtc acc cct gac acc gcg tac 2218  
 His Leu Gln Lys Val Glu Ile Lys Asn Val Thr Pro Asp Thr Ala Tyr  
 705 710 715 720

cgg gac ttc tgt ctt gct ttc att ggg aag aag acc ctc acg cac ctg 2266  
 Arg Asp Phe Cys Leu Ala Phe Ile Gly Lys Lys Thr Leu Thr His Leu  
 725 730 735

acc ctg gca ggg cac atc gag tgg gaa cgc acg atg atg ctg atg ctg 2314  
 Thr Leu Ala Gly His Ile Glu Trp Glu Arg Thr Met Met Leu Met Leu  
 740 745 750

tgt gac ctg ctc aga aat cat aaa tgc aac ctg cag tac ctg agg ttg 2362  
 Cys Asp Leu Leu Arg Asn His Lys Cys Asn Leu Gln Tyr Leu Arg Leu  
 755 760 765

gga ggt cac tgt gcc acc ccg gag cag tgg gct gaa ttc ttc tat gtc 2410  
 Gly Gly His Cys Ala Thr Pro Glu Gln Trp Ala Glu Phe Phe Tyr Val  
 770 775 780

ctc aaa gcc aac cag tcc ctg aag cac ctg cgt ctc tca gcc aat gtg 2458  
 Leu Lys Ala Asn Gln Ser Leu Lys His Leu Arg Leu Ser Ala Asn Val  
 785 790 795 800

ctc ctg gat gag ggt gcc atg ttg ctg tac aag acc atg aca cgc cca 2506  
 Leu Leu Asp Glu Gly Ala Met Leu Leu Tyr Lys Thr Met Thr Arg Pro  
 805 810 815

aaa cac ttc ctg cag atg ttg tcg ttg gaa aac tgt cgt ctt aca gaa 2554  
 Lys His Phe Leu Gln Met Leu Ser Leu Glu Asn Cys Arg Leu Thr Glu  
 820 825 830

gcc agt tgc aag gac ctt gct gct gtc ttg gtt gtc agc aag aag ctg 2602  
 Ala Ser Cys Lys Asp Leu Ala Val Leu Val Val Ser Lys Lys Leu  
 835 840 845

aca cac ctg tgc ttg gcc aag aac ccc att ggg gat aca ggg gtg aag 2650  
 Thr His Leu Cys Leu Ala Lys Asn Pro Ile Gly Asp Thr Gly Val Lys  
 850 855 860

ttt ctg tgt gag ggc ttg agt tac cct gat tgt aaa ctg cag acc ttg 2698  
 Phe Leu Cys Glu Gly Leu Ser Tyr Pro Asp Cys Lys Leu Gln Thr Leu  
 865 870 875 880

gtg tta cag caa tgc agc ata acc aag ctt ggc tgt aga tat ctc tca 2746  
 Val Leu Gln Gln Cys Ser Ile Thr Lys Leu Gly Cys Arg Tyr Leu Ser  
 885 890 895

gag gcg ctc caa gaa gcc tgc agc ctc aca aac ctg gac ttg agt atc 2794  
 Glu Ala Leu Gln Glu Ala Cys Ser Leu Thr Asn Leu Asp Leu Ser Ile  
 900 905 910

aac cag ata gct cgt gga ttg tgg att ctc tgt cag gca tta gag aat 2842  
 Asn Gln Ile Ala Arg Gly Leu Trp Ile Leu Cys Gln Ala Leu Glu Asn  
 915 920 925

cca aac tgt aac cta aaa cac cta cgg ttg aag acc tat gaa act aat 2890  
 Pro Asn Cys Asn Leu Lys His Leu Arg Leu Lys Thr Tyr Glu Thr Asn  
 930 935 940

ttg gaa atc aag aag ctg ttg gag gaa gtg aaa gaa aag aat ccc aag 2938  
 Leu Glu Ile Lys Lys Leu Leu Glu Glu Val Lys Glu Lys Asn Pro Lys  
 945 950 955 960

ctg act att gat tgc aat gct tcc ggg gca acg gca cct ccg tgc tgt 2986  
 Leu Thr Ile Asp Cys Asn Ala Ser Gly Ala Thr Ala Pro Pro Cys Cys  
 965 970 975

gac ttt ttt tgc tgagcagcct gggatcgctc tacgaattac acaggaagcg 3038  
 Asp Phe Phe Cys  
 980

ggattcgggt ctctaagatg tcttatgaat gcaggtcaga gggtcacatg ttaacactag 3098  
 agtctgtcga gaggtaggat ttgacactgg ttttctcact atttttggga gattctgcac 3158  
 gagtcacgca ccccttcac atgacgctat gtactttctc acagggataa taaagttaga 3218  
 gcactctcaa aaaaaaaaaa aaaaaaaaaa aaaaaaaaaa aaaaa 3263

&lt;210&gt; 13

&lt;211&gt; 980

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 13

Met Thr Ser Pro Gln Leu Glu Trp Thr Leu Gln Thr Leu Leu Glu Gln  
 1 5 10 15  
 Leu Asn Glu Asp Glu Leu Lys Ser Phe Lys Ser Leu Leu Trp Ala Phe  
 20 25 30  
 Pro Leu Glu Asp Val Leu Gln Lys Thr Pro Trp Ser Glu Val Glu Glu  
 35 40 45  
 Ala Asp Gly Lys Lys Leu Ala Glu Ile Leu Val Asn Thr Ser Ser Glu  
 50 55 60  
 Asn Trp Ile Arg Asn Ala Thr Val Asn Ile Leu Glu Glu Met Asn Leu  
 65 70 75 80  
 Thr Glu Leu Cys Lys Met Ala Lys Ala Glu Met Met Glu Asp Gly Gln  
 85 90 95  
 Val Gln Glu Ile Asp Asn Pro Glu Leu Gly Asp Ala Glu Glu Asp Ser  
 100 105 110  
 Glu Leu Ala Lys Pro Gly Glu Lys Glu Gly Trp Arg Asn Ser Met Glu  
 115 120 125  
 Lys Gln Ser Leu Val Trp Lys Asn Thr Phe Trp Gln Gly Asp Ile Asp  
 130 135 140  
 Asn Phe His Asp Asp Val Thr Leu Arg Asn Gln Arg Phe Ile Pro Phe  
 145 150 155 160  
 Leu Asn Pro Arg Thr Pro Arg Lys Leu Thr Pro Tyr Thr Val Val Leu  
 165 170 175  
 His Gly Pro Ala Gly Val Gly Lys Thr Thr Leu Ala Lys Lys Cys Met  
 180 185 190  
 Leu Asp Trp Thr Asp Cys Asn Leu Ser Pro Thr Leu Arg Tyr Ala Phe  
 195 200 205  
 Tyr Leu Ser Cys Lys Glu Leu Ser Arg Met Gly Pro Cys Ser Phe Ala  
 210 215 220  
 Glu Leu Ile Ser Lys Asp Trp Pro Glu Leu Gln Asp Asp Ile Pro Ser  
 225 230 235 240  
 Ile Leu Ala Gln Ala Gln Arg Ile Leu Phe Val Val Asp Gly Leu Asp  
 245 250 255  
 Glu Leu Lys Val Pro Pro Gly Ala Leu Ile Gln Asp Ile Cys Gly Asp  
 260 265 270  
 Trp Glu Lys Lys Lys Pro Val Pro Val Leu Leu Gly Ser Leu Leu Lys  
 275 280 285  
 Arg Lys Met Leu Pro Arg Ala Ala Leu Leu Val Thr Thr Arg Pro Arg  
 290 295 300  
 Ala Leu Arg Asp Leu Gln Leu Leu Ala Gln Gln Pro Ile Tyr Val Arg  
 305 310 315 320  
 Val Glu Gly Phe Leu Glu Glu Asp Arg Arg Ala Tyr Phe Leu Arg His  
 325 330 335  
 Phe Gly Asp Glu Asp Gln Ala Met Arg Ala Phe Glu Leu Met Arg Ser  
 340 345 350  
 Asn Ala Ala Leu Phe Gln Leu Gly Ser Ala Pro Ala Val Cys Trp Ile  
 355 360 365  
 Val Cys Thr Thr Leu Lys Leu Gln Met Glu Lys Gly Glu Asp Pro Val  
 370 375 380  
 Pro Thr Cys Leu Thr Arg Thr Gly Leu Phe Leu Arg Phe Leu Cys Ser  
 385 390 395 400  
 Arg Phe Pro Gln Gly Ala Gln Leu Arg Gly Ala Leu Arg Thr Leu Ser  
 405 410 415  
 Leu Leu Ala Ala Gln Gly Leu Trp Ala Gln Met Ser Val Phe His Arg  
 420 425 430

A1

Glu Asp Leu Glu Arg Leu Gly Val Gln Glu Ser Asp Leu Arg Leu Phe  
 435 440 445  
 Leu Asp Gly Asp Ile Leu Arg Gln Asp Arg Val Ser Lys Gly Cys Tyr  
 450 455 460  
 Ser Phe Ile His Leu Ser Phe Gln Gln Phe Leu Thr Ala Leu Phe Tyr  
 465 470 475 480  
 Ala Leu Glu Lys Glu Glu Gly Glu Asp Arg Asp Gly His Ala Trp Asp  
 485 490 495  
 Ile Gly Asp Val Gln Lys Leu Leu Ser Gly Glu Glu Arg Leu Lys Asn  
 500 505 510  
 Pro Asp Leu Ile Gln Val Gly His Phe Leu Phe Gly Leu Ala Asn Glu  
 515 520 525  
 Lys Arg Ala Lys Glu Leu Glu Ala Thr Phe Gly Cys Arg Met Ser Pro  
 530 535 540  
 Asp Ile Lys Gln Glu Leu Leu Gln Cys Lys Ala His Leu His Ala Asn  
 545 550 555 560  
 Lys Pro Leu Ser Val Thr Asp Leu Lys Glu Val Leu Gly Cys Leu Tyr  
 565 570 575  
 Glu Ser Gln Glu Glu Glu Leu Ala Lys Val Val Val Ala Pro Phe Lys  
 580 585 590  
 Glu Ile Ser Ile His Leu Thr Asn Thr Ser Glu Val Met His Cys Ser  
 595 600 605  
 Phe Ser Leu Lys His Cys Gln Asp Leu Gln Lys Leu Ser Leu Gln Val  
 610 615 620  
 Ala Lys Gly Val Phe Leu Glu Asn Tyr Met Asp Phe Glu Leu Asp Ile  
 625 630 635 640  
 Glu Phe Glu Arg Cys Thr Tyr Leu Thr Ile Pro Asn Trp Ala Arg Gln  
 645 650 655  
 Asp Leu Arg Ser Leu Arg Leu Trp Thr Asp Phe Cys Ser Leu Phe Ser  
 660 665 670  
 Ser Asn Ser Asn Leu Lys Phe Leu Glu Val Lys Gln Ser Phe Leu Ser  
 675 680 685  
 Asp Ser Ser Val Arg Ile Leu Cys Asp His Val Thr Arg Ser Thr Cys  
 690 695 700  
 His Leu Gln Lys Val Glu Ile Lys Asn Val Thr Pro Asp Thr Ala Tyr  
 705 710 715 720  
 Arg Asp Phe Cys Leu Ala Phe Ile Gly Lys Lys Thr Leu Thr His Leu  
 725 730 735  
 Thr Leu Ala Gly His Ile Glu Trp Glu Arg Thr Met Met Leu Met Leu  
 740 745 750  
 Cys Asp Leu Leu Arg Asn His Lys Cys Asn Leu Gln Tyr Leu Arg Leu  
 755 760 765  
 Gly Gly His Cys Ala Thr Pro Glu Gln Trp Ala Glu Phe Phe Tyr Val  
 770 775 780  
 Leu Lys Ala Asn Gln Ser Leu Lys His Leu Arg Leu Ser Ala Asn Val  
 785 790 795 800  
 Leu Leu Asp Glu Gly Ala Met Leu Leu Tyr Lys Thr Met Thr Arg Pro  
 805 810 815  
 Lys His Phe Leu Gln Met Leu Ser Leu Glu Asn Cys Arg Leu Thr Glu  
 820 825 830  
 Ala Ser Cys Lys Asp Leu Ala Ala Val Leu Val Val Ser Lys Lys Leu  
 835 840 845  
 Thr His Leu Cys Leu Ala Lys Asn Pro Ile Gly Asp Thr Gly Val Lys  
 850 855 860  
 Phe Leu Cys Glu Gly Leu Ser Tyr Pro Asp Cys Lys Leu Gln Thr Leu  
 865 870 875 880

A1

Val Leu Gln Gln Cys Ser Ile Thr Lys Leu Gly Cys Arg Tyr Leu Ser  
 885 890 895  
 Glu Ala Leu Gln Glu Ala Cys Ser Leu Thr Asn Leu Asp Leu Ser Ile  
 900 905 910  
 Asn Gln Ile Ala Arg Gly Leu Trp Ile Leu Cys Gln Ala Leu Glu Asn  
 915 920 925  
 Pro Asn Cys Asn Leu Lys His Leu Arg Leu Lys Thr Tyr Glu Thr Asn  
 930 935 940  
 Leu Glu Ile Lys Lys Leu Leu Glu Glu Val Lys Glu Lys Asn Pro Lys  
 945 950 955 960  
 Leu Thr Ile Asp Cys Asn Ala Ser Gly Ala Thr Ala Pro Pro Cys Cys  
 965 970 975  
 Asp Phe Phe Cys  
 980

&lt;210&gt; 14

&lt;211&gt; 2940

&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

&lt;400&gt; 14

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A1

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&lt;210&gt; 15

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&lt;212&gt; DNA

&lt;213&gt; Homo sapiens

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&lt;222&gt; (1)...(2625)

&lt;400&gt; 15

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aat ctc agt gac aag gaa ttt cag agt ttt aag aag tat ctg gca cgc 96
Asn Leu Ser Asp Lys Glu Phe Gln Ser Phe Lys Lys Tyr Leu Ala Arg
20 25 30

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aag att ctt gat ttc aaa ctg cca cag ttt cca ctg ata cag atg aca 144
Lys Ile Leu Asp Phe Lys Leu Pro Gln Phe Pro Leu Ile Gln Met Thr
35 40 45

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aaa gaa gaa ctg gct aac gtg ttg cca atc tct tat gag gga cag tat 192
Lys Glu Glu Leu Ala Asn Val Leu Pro Ile Ser Tyr Glu Gly Gln Tyr
50 55 60

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ata tgg aat atg ctc ttc agc ata ttt tca atg atg cgt aag gaa gat 240
Ile Trp Asn Met Leu Phe Ser Ile Phe Ser Met Met Arg Lys Glu Asp
65 70 75 80

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ctt tgt agg aag atc att ggc aga cga aac cat gtg ttc tac ata ctt 288
Leu Cys Arg Lys Ile Ile Gly Arg Arg Asn His Val Phe Tyr Ile Leu
85 90 95

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caa tta gcc tat gat tct acc agc tat tat tca gca aac aat ctc aat 336
Gln Leu Ala Tyr Asp Ser Thr Ser Tyr Tyr Ser Ala Asn Asn Leu Asn
100 105 110

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gtg ttc ctg atg gga gag aga gca tct gga aaa act att gtt ata aat 384
Val Phe Leu Met Gly Glu Arg Ala Ser Gly Lys Thr Ile Val Ile Asn
115 120 125

```

A/

ctg gct gtg ttg agg tgg atc aag ggt gag atg tgg cag aac atg atc 432  
 Leu Ala Val Leu Arg Trp Ile Lys Gly Glu Met Trp Gln Asn Met Ile  
 130 135 140

tcg tac gtc gtt cac ctc act tct cac gaa ata aac cag atg acc aac 480  
 Ser Tyr Val Val His Leu Thr Ser His Glu Ile Asn Gln Met Thr Asn  
 145 150 155 160

agc agc ttg gct gag cta atc gcc aag gac tgg cct gac ggc cag gct 528  
 Ser Ser Leu Ala Glu Leu Ile Ala Lys Asp Trp Pro Asp Gly Gln Ala  
 165 170 175

ccc att gca gac atc ctg tct gat ccc aag aaa ctc ctt ttc att ctc 576  
 Pro Ile Ala Asp Ile Leu Ser Asp Pro Lys Lys Leu Leu Phe Ile Leu  
 180 185 190

gag gac ttg gac aac ata aga ttc gag tta aat gtc aat gaa agt gct 624  
 Glu Asp Leu Asp Asn Ile Arg Phe Glu Leu Asn Val Asn Glu Ser Ala  
 195 200 205

ttg tgt agt aac agc acc cag aaa gtt ccc att cca gtt ctc ctg gtc 672  
 Leu Cys Ser Asn Ser Thr Gln Lys Val Pro Ile Pro Val Leu Leu Val  
 210 215 220

A1 agt ttg ctg aag aga aaa atg gct cca ggc tgc tgg ttc ctc atc tcc 720  
 Ser Leu Leu Lys Arg Lys Met Ala Pro Gly Cys Trp Phe Leu Ile Ser  
 225 230 235 240

tca agg ccc aca cgt ggg aat aat gta aaa acg ttc ttg aaa gag gta 768  
 Ser Arg Pro Thr Arg Gly Asn Asn Val Lys Thr Phe Leu Lys Glu Val  
 245 250 255

gat tgc tgc acg acc ttg cag ctg tgc aat ggg aag agg gag ata tat 816  
 Asp Cys Cys Thr Thr Leu Gln Leu Ser Asn Gly Lys Arg Glu Ile Tyr  
 260 265 270

ttt aac tct ttc ttt aaa gac cgc cag agg gcg tgc gca gcc ctc cag 864  
 Phe Asn Ser Phe Phe Lys Asp Arg Gln Arg Ala Ser Ala Ala Leu Gln  
 275 280 285

ctt gta cat gag gat gaa ata ctc gtg ggt ctg tgc cga gtc gcc atc 912  
 Leu Val His Glu Asp Glu Ile Leu Val Gly Leu Cys Arg Val Ala Ile  
 290 295 300

tta tgc tgg atc acg tgt act gtc ctg aag cgg cag atg gac aag ggg 960  
 Leu Cys Trp Ile Thr Cys Thr Val Leu Lys Arg Gln Met Asp Lys Gly  
 305 310 315 320

cgt gac ttc cag ctc tgc tgc caa aca ccc act gat cta cat gcc cac 1008  
 Arg Asp Phe Gln Leu Cys Cys Gln Thr Pro Thr Asp Leu His Ala His  
 325 330 335

ttt ctt gct gat gcg ttg aca tca gag gct gga ctt act gcc aat cag 1056  
 Phe Leu Ala Asp Ala Leu Thr Ser Glu Ala Gly Leu Thr Ala Asn Gln  
 340 345 350

|   |      |
|---|------|
| tat cac cta ggt ctc cta aaa cgt ctg tgt ttg ctg gct gca gga gga<br>Tyr His Leu Gly Leu Leu Lys Arg Leu Cys Leu Leu Ala Ala Gly Gly<br>355 360 365               | 1104 |
| ctg ttt ctg agc acc ctg aat ttc agt ggt gaa gac ctc aga tgt gtt<br>Leu Phe Leu Ser Thr Leu Asn Phe Ser Gly Glu Asp Leu Arg Cys Val<br>370 375 380               | 1152 |
| ggg ttt act gag gct gat gtc tct gtg ttg cag gcc gcg aat att ctt<br>Gly Phe Thr Glu Ala Asp Val Ser Val Leu Gln Ala Ala Asn Ile Leu<br>385 390 395 400           | 1200 |
| ttg ccg agc aac act cat aaa gac cgt tac aag ttc ata cac ttg aac<br>Leu Pro Ser Asn Thr His Lys Asp Arg Tyr Lys Phe Ile His Leu Asn<br>405 410 415               | 1248 |
| gtc cag gag ttt tgt aca gcc att gca ttt ctg atg gca gta ccc aac<br>Val Gln Glu Phe Cys Thr Ala Ile Ala Phe Leu Met Ala Val Pro Asn<br>420 425 430               | 1296 |
| tat ctg atc ccc tca ggc agc aga gag tat aaa gag aag aga gaa caa<br>Tyr Leu Ile Pro Ser Gly Ser Arg Glu Tyr Lys Glu Lys Arg Glu Gln<br>435 440 445               | 1344 |
| tac tct gac ttt aat caa gtg ttt act ttc att ttt ggt ctt cta aat<br>Tyr Ser Asp Phe Asn Gln Val Phe Thr Phe Ile Phe Gly Leu Leu Asn<br>450 455 460               | 1392 |
| <i>A1</i> gca aac agg aga aag att ctt gag aca tcc ttt gga tac cag cta ccg<br>Ala Asn Arg Arg Lys Ile Leu Glu Thr Ser Phe Gly Tyr Gln Leu Pro<br>465 470 475 480 | 1440 |
| atg gta gac agc ttc aag tgg tac tcg gtg gga tac atg aaa cat ttg<br>Met Val Asp Ser Phe Lys Trp Tyr Ser Val Gly Tyr Met Lys His Leu<br>485 490 495               | 1488 |
| gac cgt gac ccg gaa aag ttg acg cac cat atg cct ttg ttt tac tgt<br>Asp Arg Asp Pro Glu Lys Leu Thr His His Met Pro Leu Phe Tyr Cys<br>500 505 510               | 1536 |
| ctc tat gag aat cgg gaa gaa gaa ttt gtg aag acg att gtg gat gct<br>Leu Tyr Glu Asn Arg Glu Glu Phe Val Lys Thr Ile Val Asp Ala<br>515 520 525                   | 1584 |
| ctc atg gag gtt aca gtt tac ctt caa tca gac aag gat atg atg gtc<br>Leu Met Glu Val Thr Val Tyr Leu Gln Ser Asp Lys Asp Met Met Val<br>530 535 540               | 1632 |
| tca tta tac tgt ctg gat tac tgc tgt cac ctg agg aca ctt aag ttg<br>Ser Leu Tyr Cys Leu Asp Tyr Cys Cys His Leu Arg Thr Leu Lys Leu<br>545 550 555 560           | 1680 |
| agt gtt cag cgc atc ttt caa aac aaa gag cca ctt ata agg cca act<br>Ser Val Gln Arg Ile Phe Gln Asn Lys Glu Pro Leu Ile Arg Pro Thr<br>565 570 575               | 1728 |



|  |      |
|--|------|
| gct agt caa atg aag agc ctt gtc tac tgg aga gag atc tgc tct ctt  | 1776 |
| Ala Ser Gln Met Lys Ser Leu Val Tyr Trp Arg Glu Ile Cys Ser Leu  |      |
| 580 585 590  |      |
| ttt tat aca atg gag agc ctc cgg gag ctg cat atc ttt gac aat gac  | 1824 |
| Phe Tyr Thr Met Glu Ser Leu Arg Glu Leu His Ile Phe Asp Asn Asp  |      |
| 595 600 605  |      |
| ctt aat ggt att tca gaa agg att ctg tct aaa gcc ctg gag cat tct  | 1872 |
| Leu Asn Gly Ile Ser Glu Arg Ile Leu Ser Lys Ala Leu Glu His Ser  |      |
| 610 615 620  |      |
| agc tgt aaa ctt cgc aca ctc aag ttg tcc tat gtc tcg act gct tct  | 1920 |
| Ser Cys Lys Leu Arg Thr Leu Lys Leu Ser Tyr Val Ser Thr Ala Ser  |      |
| 625 630 635 640  |      |
| ggt ttt gaa gac tta ctc aag gct ttg gct cgt aat cgg agc ctg aca  | 1968 |
| Gly Phe Glu Asp Leu Leu Lys Ala Leu Ala Arg Asn Arg Ser Leu Thr  |      |
| 645 650 655  |      |
| tac ctg agt atc aac tgt acg tcc att tcc cta aat atg ttt tca ctt  | 2016 |
| Tyr Leu Ser Ile Asn Cys Thr Ser Ile Ser Leu Asn Met Phe Ser Leu  |      |
| 660 665 670  |      |
| ctg cat gac atc ctg cac gag ccc aca tgc caa ata agt cat ctg agc  | 2064 |
| Leu His Asp Ile Leu His Glu Pro Thr Cys Gln Ile Ser His Leu Ser  |      |
| 675 680 685  |      |
| ttg atg aaa tgt gat ttg cga gcc agc gaa tgc gaa) gaa atc gcc tct | 2112 |
| Leu Met Lys Cys Asp Leu Arg Ala Ser Glu Cys Glu Glu Ile Ala Ser  |      |
| 690 695 700  |      |
| ctc ctc atc agt ggc ggg agt ctg aga aaa ctg acc tta tcc agc aat  | 2160 |
| Leu Leu Ile Ser Gly Gly Ser Leu Arg Lys Leu Thr Leu Ser Ser Asn  |      |
| 705 710 715 720  |      |
| ccg ctg agg agc gac ggg atg aac ata ctg tgt gat gcc ttg ctt cat  | 2208 |
| Pro Leu Arg Ser Asp Gly Met Asn Ile Leu Cys Asp Ala Leu Leu His  |      |
| 725 730 735  |      |
| ccc aac tgc act ctt ata tca ctg gtt ctg tct ggc tgt ttc ttt agc  | 2256 |
| Pro Asn Cys Thr Leu Ile Ser Leu Val Leu Ser Gly Cys Phe Phe Ser  |      |
| 740 745 750  |      |
| agc gat atc tgt caa tat att gcc ata gtt att gct act aat gaa aaa  | 2304 |
| Ser Asp Ile Cys Gln Tyr Ile Ala Ile Val Ile Ala Thr Asn Glu Lys  |      |
| 755 760 765  |      |
| ctg agg agc ctg gag att ggg agc aac aaa ata gaa gat gca gga atg  | 2352 |
| Leu Arg Ser Leu Glu Ile Gly Ser Asn Lys Ile Glu Asp Ala Gly Met  |      |
| 770 775 780  |      |
| cag ctg cta tgt ggt ggt ttg aga cat ccc aac tgc atg ttg gtg aat  | 2400 |
| Gln Leu Leu Cys Gly Gly Leu Arg His Pro Asn Cys Met Leu Val Asn  |      |
| 785 790 795 800  |      |

A1

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 Ile Gly Leu Glu Glu Cys Met Leu Thr Ser Ala Cys Cys Arg Ser Leu  
                     805                    810                    815

gcc tct gtt ctt acc acc aac aaa aca cta gaa aga ctc aac ttg ctt 2496  
 Ala Ser Val Leu Thr Thr Asn Lys Thr Leu Glu Arg Leu Asn Leu Leu  
                     820                    825                    830

caa aat cac ttg ggc aat gat gga gtt gca aaa ctt ctt gag agc ttg 2544  
 Gln Asn His Leu Gly Asn Asp Gly Val Ala Lys Leu Leu Glu Ser Leu  
                     835                    840                    845

atc agc cca gat tgt gta ctt aag gta gtt ggc ttg atg gct gct gag 2592  
 Ile Ser Pro Asp Cys Val Leu Lys Val Val Gly Leu Met Ala Ala Glu  
                     850                    855                    860

aac atg gag tcc ctc att ccc agg cca gca cgc tga 2628  
 Asn Met Glu Ser Leu Ile Pro Arg Pro Ala Arg  
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<210> 16

<211> 875

<212> PRT

<213> Homo sapiens

<400> 16

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                     20                    25                    30  
 Lys Ile Leu Asp Phe Lys Leu Pro Gln Phe Pro Leu Ile Gln Met Thr  
                     35                    40                    45  
 Lys Glu Glu Leu Ala Asn Val Leu Pro Ile Ser Tyr Glu Gly Gln Tyr  
                     50                    55                    60  
 Ile Trp Asn Met Leu Phe Ser Ile Phe Ser Met Met Arg Lys Glu Asp  
   65                    70                    75                    80  
 Leu Cys Arg Lys Ile Ile Gly Arg Arg Asn His Val Phe Tyr Ile Leu  
                     85                    90                    95  
 Gln Leu Ala Tyr Asp Ser Thr Ser Tyr Tyr Ser Ala Asn Asn Leu Asn  
                     100                    105                    110  
 Val Phe Leu Met Gly Glu Arg Ala Ser Gly Lys Thr Ile Val Ile Asn  
                     115                    120                    125  
 Leu Ala Val Leu Arg Trp Ile Lys Gly Glu Met Trp Gln Asn Met Ile  
                     130                    135                    140  
 Ser Tyr Val Val His Leu Thr Ser His Glu Ile Asn Gln Met Thr Asn  
  145                    150                    155                    160  
 Ser Ser Leu Ala Glu Leu Ile Ala Lys Asp Trp Pro Asp Gly Gln Ala  
                     165                    170                    175  
 Pro Ile Ala Asp Ile Leu Ser Asp Pro Lys Lys Leu Leu Phe Ile Leu  
                     180                    185                    190  
 Glu Asp Leu Asp Asn Ile Arg Phe Glu Leu Asn Val Asn Glu Ser Ala  
                     195                    200                    205  
 Leu Cys Ser Asn Ser Thr Gln Lys Val Pro Ile Pro Val Leu Leu Val  
                     210                    215                    220  
 Ser Leu Leu Lys Arg Lys Met Ala Pro Gly Cys Trp Phe Leu Ile Ser  
  225                    230                    235                    240

A1

Ser Arg Pro Thr Arg Gly Asn Asn Val Lys Thr Phe Leu Lys Glu Val  
 245 250 255  
 Asp Cys Cys Thr Thr Leu Gln Leu Ser Asn Gly Lys Arg Glu Ile Tyr  
 260 265 270  
 Phe Asn Ser Phe Phe Lys Asp Arg Gln Arg Ala Ser Ala Ala Leu Gln  
 275 280 285  
 Leu Val His Glu Asp Glu Ile Leu Val Gly Leu Cys Arg Val Ala Ile  
 290 295 300  
 Leu Cys Trp Ile Thr Cys Thr Val Leu Lys Arg Gln Met Asp Lys Gly  
 305 310 315 320  
 Arg Asp Phe Gln Leu Cys Cys Gln Thr Pro Thr Asp Leu His Ala His  
 325 330 335  
 Phe Leu Ala Asp Ala Leu Thr Ser Glu Ala Gly Leu Thr Ala Asn Gln  
 340 345 350  
 Tyr His Leu Gly Leu Leu Lys Arg Leu Cys Leu Leu Ala Ala Gly Gly  
 355 360 365  
 Leu Phe Leu Ser Thr Leu Asn Phe Ser Gly Glu Asp Leu Arg Cys Val  
 370 375 380  
 Gly Phe Thr Glu Ala Asp Val Ser Val Leu Gln Ala Ala Asn Ile Leu  
 385 390 395 400  
 Leu Pro Ser Asn Thr His Lys Asp Arg Tyr Lys Phe Ile His Leu Asn  
 405 410 415  
 Val Gln Glu Phe Cys Thr Ala Ile Ala Phe Leu Met Ala Val Pro Asn  
 420 425 430  
 Tyr Leu Ile Pro Ser Gly Ser Arg Glu Tyr Lys Glu Lys Arg Glu Gln  
 435 440 445  
 Tyr Ser Asp Phe Asn Gln Val Phe Thr Phe Ile Phe Gly Leu Leu Asn  
 450 455 460  
 Ala Asn Arg Arg Lys Ile Leu Glu Thr Ser Phe Gly Tyr Gln Leu Pro  
 465 470 475 480  
 Met Val Asp Ser Phe Lys Trp Tyr Ser Val Gly Tyr Met Lys His Leu  
 485 490 495  
 Asp Arg Asp Pro Glu Lys Leu Thr His His Met Pro Leu Phe Tyr Cys  
 500 505 510  
 Leu Tyr Glu Asn Arg Glu Glu Glu Phe Val Lys Thr Ile Val Asp Ala  
 515 520 525  
 Leu Met Glu Val Thr Val Tyr Leu Gln Ser Asp Lys Asp Met Met Val  
 530 535 540  
 Ser Leu Tyr Cys Leu Asp Tyr Cys Cys His Leu Arg Thr Leu Lys Leu  
 545 550 555 560  
 Ser Val Gln Arg Ile Phe Gln Asn Lys Glu Pro Leu Ile Arg Pro Thr  
 565 570 575  
 Ala Ser Gln Met Lys Ser Leu Val Tyr Trp Arg Glu Ile Cys Ser Leu  
 580 585 590  
 Phe Tyr Thr Met Glu Ser Leu Arg Glu Leu His Ile Phe Asp Asn Asp  
 595 600 605  
 Leu Asn Gly Ile Ser Glu Arg Ile Leu Ser Lys Ala Leu Glu His Ser  
 610 615 620  
 Ser Cys Lys Leu Arg Thr Leu Lys Leu Ser Tyr Val Ser Thr Ala Ser  
 625 630 635 640  
 Gly Phe Glu Asp Leu Leu Lys Ala Leu Ala Arg Asn Arg Ser Leu Thr  
 645 650 655  
 Tyr Leu Ser Ile Asn Cys Thr Ser Ile Ser Leu Asn Met Phe Ser Leu  
 660 665 670  
 Leu His Asp Ile Leu His Glu Pro Thr Cys Gln Ile Ser His Leu Ser  
 675 680 685

A1

Leu Met Lys Cys Asp Leu Arg Ala Ser Glu Cys Glu Glu Ile Ala Ser  
 690 695 700  
 Leu Leu Ile Ser Gly Gly Ser Leu Arg Lys Leu Thr Leu Ser Ser Asn  
 705 710 715 720  
 Pro Leu Arg Ser Asp Gly Met Asn Ile Leu Cys Asp Ala Leu Leu His  
 725 730 735  
 Pro Asn Cys Thr Leu Ile Ser Leu Val Leu Ser Gly Cys Phe Phe Ser  
 740 745 750  
 Ser Asp Ile Cys Gln Tyr Ile Ala Ile Val Ile Ala Thr Asn Glu Lys  
 755 760 765  
 Leu Arg Ser Leu Glu Ile Gly Ser Asn Lys Ile Glu Asp Ala Gly Met  
 770 775 780  
 Gln Leu Leu Cys Gly Gly Leu Arg His Pro Asn Cys Met Leu Val Asn  
 785 790 795 800  
 Ile Gly Leu Glu Glu Cys Met Leu Thr Ser Ala Cys Cys Arg Ser Leu  
 805 810 815  
 Ala Ser Val Leu Thr Thr Asn Lys Thr Leu Glu Arg Leu Asn Leu Leu  
 820 825 830  
 Gln Asn His Leu Gly Asn Asp Gly Val Ala Lys Leu Leu Glu Ser Leu  
 835 840 845  
 Ile Ser Pro Asp Cys Val Leu Lys Val Val Gly Leu Met Ala Ala Glu  
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<210> 17

<211> 2625

<212> DNA

<213> Homo sapiens

<400> 17

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 cagtttccac tgatacagat gacaaaagaa gaactggcta acgtgttgcc aatctcttat 180  
 gagggacagt atatatggaa tatgctcttc agcatatttt caatgatgag taaggaagat 240  
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